KLEINSCHMIDT CENTENNIAL II: SAMUEL PETRUS KLEINSCHMIDT*

OTTO ROSING[1]

EGEDESMINDE, GREENLAND

Samuel Kleinschmidt's father, Johan Conrad Kleinschmidt, was a German Herrnhut missionary; born in Oberdorlam, Thüringen in 1768, he came to Greenland in 1793. S. K.'s mother Christine Petersen was a Dane, born at Trudsø in Sønderjylland (North Schleswig). Samuel was born in 1814 at the idyllic Herrnhut rectory of Lichtenau in South Greenland, and grew up there until, at the age of eight, he was sent to the brotherhood in Kleinwelke, Sachsen, to go to school. From childhood on he was familiar with three languages: Danish, German, and Greenlandic. By playing with Greenlandic children he learned, automatically, the thought processes of the Greenlanders and acquired the language as it was used and understood by the native population. If gifts are hereditary, S. K. had every reason to be gifted. His father Conrad seems to have been one of the most gifted Brother-missionaries who went out from Herrnhut. This is apparent inter alia from his translation work, particularly the translation of the New Testament. It wasn't long until Conrad Kleinschmidt was entrusted with an independent position.

The youth Samuel went to school in Kleinwelke for five years. We know nothing about how he got along in school. Suddenly he appears in Holland, in the town of Zeist (1828), and here he remained for six years. There is every indication that he received his linguistic training here. In Zeist there was a school for future missionaries of the brotherhood. It has been asserted that S. K. took pharmaceutical instruction at this time, but that cannot be right because there was no university in the town. A German mission-historian, Adolf Schultz, states that Kleinschmidt had studied natural sciences including physics but this cannot be determined on the basis of his work. In fact one is tempted to believe that he was not even acquainted with Otho Fabricius' Fauna Groenlandica (1780). During his stay in Zeist he had probably become good friends with a druggist and helped in the preparation of drugs. On the other hand it is certain that his linguistic gifts underwent rapid development, as he learned Latin, Greek, and Hebrew, along with Dutch, French, and English, while retaining his childhood languages, Danish, German, and Greenlandic.

After the period of instruction in the mission school he became a school teacher at Christiansfeldt and remained there for four years. Here Danish was spoken in the town but German was the church and school language. Here also was the mission's archive so that S. K. was able to acquire a good knowledge of the history of the Herrnhut mission and so to prepare himself for his future activities.

* This is the second of a series of papers relating to Eskimo in commemoration of Kleinschmidt's publication (1851) which initiated the presentation of grammars of languages native to the Western Hemisphere in terms of their own structures. Other papers are scheduled for every issue of volume 17 of IJAL (1951) which will be designated as the Kleinschmidt Centennial Volume. Additional papers will be published in this series if Eskimologists, and other interested scholars, will send their manuscripts to the editor of IJAL without delay. C.F.V.

[1] Pastor Otto Rosing is the author of several Greenlandic books concerning well known Greenlandic personalities: *Carl Julius Spindler* (printed in Nûngme [Godthaab] in Greenland); *Suersaq, Hans Hendrik* (ibid., 1948); and a book on *Sam. Kleinschmidt* (ibid., 1949) which contains a complete bibliography.

In 1840 he went to Greenland; at that time he was a young man of 26 years. Before he left the mission's administration had appointed him the special task of studying and working with the Greenlandic language, along with the giving of a series of educational lectures for young people which was to include recitation of mission history, religious writings, and moral law. But S. K. wanted to have nothing to do with recitations because he didn't want to repeat all the errors and misunderstandings which were lodged in the then available books printed in Greenlandic.

He came to Lichtenau and was to work under the missionary Vallentin Müller. Because of his lack of fondness for physical labor such as gardening and beer-brewing he was not particularly popular; he preferred to go out and talk with the people.

Two years after his arrival in Greenland he held his first sermon in Greenlandic. He spoke correctly, not employing the old worn-out locutions, but speaking plainly just as the Greenlanders spoke in everyday speech so that every auditor understood what he was talking about.

Five years after his arrival in Greenland he had already finished his Greenlandic grammar and sent the manuscript to the philosophical faculty of the University of Berlin, but five more years were to pass before it pleased the professors to compass the printing in 1851. From this work he reaped much recognition and fame. The faculty offered him an honorary doctorate in the University of Berlin, but S. K. refused the honor with the explanation that one didn't need that sort of title in Greenland.

Kleinschmidt had not constructed his grammar according to the time-honored Latin systems, but instead, according to the language's own structure. In the works of his predecessors he had a good basis on which to build further (Poul Egede's grammar 1750, Otho Fabricius 1801, possibly also the missionary Königseer's manuscript [never printed]).

S. K. had not invented the now current Greenlandic orthography in his grammar; this appeared much later than the grammar, specifically when he issued the Greenlandic Dictionary (1871). Strangely enough, in the first draft of his dictionary (1863), Kleinschmidt had begun to use the old orthography of Fabricius, [Was he in doubt as to the accuracy of his grammar? O. R.]. The orthography now in use derives from his grammatical presentation of the language, but he was not alone in developing it. He had a good adviser and support in the extraordinarily gifted Greenlandic school teacher Vittus Steenholdt of Jacobshavn. In the preface to his dictionary he notes his debt of thanks to him.

S. K.'s interests were quite various. He studied the following sciences: natural science, geography, astronomy, meteorology, cartography, in addition to the Scandinavians of Greenland (the middle ages). Many scientists who undertook field trips to Greenland had an understanding and helpful friend in S. K., and all of them were deferential to him. He was quite industrious and left behind a body of notes which will doubtless have interest for later investigators. For example it should be mentioned that throughout the long years S. K. observed and annotated the aurora borealis, although the Danish meteorological institute had informed him that it wasn't necessary to note the aurora, that it had no interest because one knew very little about these phenomena. However S. K. continued to note the aurora right up to his death. Later his notes were used by the Norwegian scientist Sophus Tromholt for a doctoral thesis. Tromholt regarded them as a gold mine in regard to aurora research.

His basic work was as teacher to the young future Greenlandish school teachers; he also worked at the great task of translating the bible into Greenlandic and this took up much of his time throughout his life. He began this big job in 1856 and continued until he was no longer capable; when he

died the pastors H. F. Jørgensen and Chr. Rasmussen completed the work of translation.

Among his interests were also the miserable social conditions which prevailed in his time. His work in the setting up of the institution *forstanderskab* cannot be appraised highly enough; in the *forstanderskabs* the communal setup was ordered in such a way that the native Greenlanders were gradually included in the administration of their own societal affairs.

In spite of his extraordinary gifts it appears that S. K. did not have enough foresight to teach his pupils the Danish language, and that he had no thought of the possibility that Greenlanders might in future times come into communication with other nations. Otherwise he was before his time in many points, but he believed that Greenland was a long way away from rapid progress.

1859 was a notable year for S. K. since in that year he went over to the Danish mission. Relations between S. K. and his Herrnhut brothers had grown more and more tense as time went on, since S. K. had his own ideas about church discipline. He broke with the brothers while in Neuherrnhut, but he sent his letter of resignation from Berthelsdorff in 1860.

He was received with open arms by the directorate of the seminary in Godthaab as a welcome and worthy addition to the teaching staff. He had already, through industry and ability, reaped full recognition from all sides. At that time there existed many text books in Greenlandic which he himself had printed on the little hand press that he had had sent from the community in Zeist.

S. K. had dedicated his life to Greenland, he regarded this as his personal calling—a gift of God. He was 72 years old and of these years he had lived 54 in Greenland. With the years he adopted more and more the Greenlandic mode of life, he spoke and dressed exactly like the natives. He became an idiosyncratic and for many years he was the "extraordinary man in Godthaab". During the last two years of his life his formerly so clear brain became somewhat clouded so that he had to be attended day and night.

If handwriting can demonstrate psychological traits of the writer then Kleinschmidt's fist shows his fine character and great sense of order. Considering his severe nearsightedness his achievements in chirography are phenomenal; some of his manuscripts can only be read with a magnifying glass.

The year before his death S. K. was honored by the Danish king with the "golden order of merit" ("for extraordinary intellectual achievement") (1885).

His death is falsely dated as February 8th, 1886 in many handbooks and other works. The correct deathday is the 9th of February of the same year. No one was present when he died; Samuel was found dead in his room. On the 18th of February he was buried in the brotherhood's churchyard, during a raging snowstorm. On the initiative of the director of the Danish seminary and vicar in Godthaab the grave-site was moved to the local protestant churchyard on the 6th of August, 1904, with speeches (in Greenlandic) and a blowing of trombones.

TRANSLATED FROM THE DANISH BY W. D. PRESTON.

KLEINSCHMIDT CENTENNIAL III: UNAALIQ AND PROTO ESKIMO

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1.1. Materials
1.2. Time depth
1.3. Typical dialects
1.4. Main divisions

1.1. The present work presents a body of Unaaliq Eskimo material shown in relation to other Eskimo dialects from Alaska to Greenland. This makes possible an internal classification of the Eskimo stock and a general theory of its linguistic history. During the course of the research some data were gathered on the relationship of Eskimo to Aleut, but these are reserved for a future study.

The Unaaliq material was obtained from James Andrews, who visited New Haven Connecticut in 1936 as a participant in the Sportsmen's Show. Since Mr. Andrews had only a few days to spend, it was not possible to obtain more than a vocabulary of about 500 words, a few paradigms and a short text.[1] Following my usual field procedure, I recorded rapidly, reserving the verification of subtle phonetic details for later check and re-check. However, the brief period of work with Mr. Andrews prevented a final check of all points. Some errors remain, particularly in the distinction of palatal and velar sounds (k versus q, x versus χ, γ versus ʁ) and in the determination of single and double phonemes. Fortunately, in most cases we have the indirect check of the forms in related dialects.

For the dialects other than Unaaliq three principal sources have been used—Kleinschmidt's material on Greenlandic, Jenness' comparative vocabularies, Hinz' work on Kuskokwim of southwest Alaska. Other sources have been consulted as necessary to clarify particular points. The bibliography is as follows:

Samuel Kleinschmidt, Grammatik der grönländischen Sprache, Berlin 1851.

Samuel Kleinschmidt, Den Grønlandske Ordbog, Kjøbenhavn 1871.

D. Jenness, Comparative Vocabulary of the Western Eskimo Dialects, vol. xv, part A, Report of the Canadian Arctic Expedition 1913–18, Ottawa 1928.

D. Jenness, Notes on the Phonology of the Eskimo Dialect of Cape Prince of Wales, Alaska, IJAL 4.168–80 (1927).

John Hinz, Grammar and Vocabulary of the Eskimo Language as spoken by the Kuskokwim and Southwest Coast Eskimos of Alaska, Bethlehem 1944.

Friedrich Erdman, Eskimoisches Wörterbuch, Budissen 1866. (Relates to Labrador dialect.)

William Thalbitzer, Eskimo, Bureau of American Ethnology Bulletin 40.967–1069, 1911.

Kaj Birket-Smith, Five Hundred Eskimo Words, A Comparative Vocabulary from Greenland and Central Eskimo Dialects, vol. 3, no. 3, Report of the Fifth Thule Expedition 1921–24, Copenhagen 1928.

Knud Rasmussen and H. Ostermann, Alaskan Eskimo Words, vol. 3, no. 4, Report of the Fifth Thule Expedition 1921-24, Copenhagen 1941.

B. G. Bogoraz, Jutskij jazik, Jaziki i pjisjmjennostj narodov sjevjera 3.105-28, 1934.

Xwaŋkuta ihaput (Nasha Knjiga), Leningrad 1932. (Used to obtain additional vocabulary in the Siberian dialect.)

[1] The original field notes, under the title of Unaaliq Eskimo Materials, are in the Boas Collection of the American Philosophical Society Library in Philadelphia. The Library's Philips Fund made possible the research leading to the present study.

Alfred G. Frances, Kotzebue Eskimo Vocabulary, 1935. Ms. in the Boas Collection of the American Philosophical Society Library.

Today, one hundred years after the publication of Kleinschmidt's grammar, it is noteworthy that the work of this scientist still ranks as best in the field of descriptive Eskimo studies. His analysis of the structure of Eskimo impresses one still with its soundness and clarity. And in his treatment of the sounds he discovered and accurately recorded every one of the essential distinctions. While his alphabet uses separate signs for certain positional variants and therefore has more than the minimum number of necessary symbols, nevertheless it represents every essential detail so systematically and regularly that the whole can be converted quite automatically into a fully phonemic orthography. Indirectly, Kleinschmidt is also responsible for some of the merit of Hinz' work, since Hinz modeled his treatment on Kleinschmidt's; Hinz largely, but not quite entirely, succeeds in adapting the approach to the special problems of the southwestern Alaska dialects.

The essence of the Kleinschmidt tradition consists in determining and clearly setting down the essential linguistic elements, and its importance can best be seen in the field of phonetics. Meticulous care in the notation of every variation of sound, in the style of William Thalbitzer and his school, provides valuable information for tracing detailed relationships of dialects and for determining the recent effects of one dialect on another, but tends to obscure the problem of relationships dating farther back. It is possible that attention to phonetic details without sufficient consideration of phonemic essentials may be responsible for Thalbitzer's erroneous classification of the Eskimo dialects into an Eastern and a Western group (BAE-B 40.972). Whereas Thalbitzer places the main division between the Mackenzie dialect and those farther east, our analysis indicates the major line of demarcation to be within Alaska itself.

1.2. The Eskimo stock constitutes a sufficiently close unity and the characteristics of the stock, both phonetically and morphologically, are sufficiently distinctive so that there has never been any doubt of the relatedness of all the dialects. The geographic spread of the stock is coastal—all around the Alaskan Peninsula, through the Arctic islands and along the northern coast of the continent, on Greenland and on Labrador. In all this extension, there is no widely aberrant dialect. All are clearly of one family.

A measure of the internal divergence of the Eskimo stock was taken by the method of basic vocabulary correspondences.[2] Greenlandic and Labrador Eskimo were taken together as one pole of comparison, Unaaliq and Kuskokwim were combined for the other; the use of pairs of closely related dialects was convenient because it was not always possible to find the desired word within one dialect. Of 143 test items found in both dialect pairs, 65% showed correspondence. This is slightly more than the 60% found in a similar test between English and German. Thus, the maximum divergence within the Eskimo stock is a little less than that which separates English and German. From this we derive an approximate notion of the time depth of the Eskimo stock. It would seem that perhaps 1500 and 2000 years ago the linguistic predecessors of all present-day Eskimos spoke one language.

The close internal cohesion of the Eskimo stock stands in interesting contrast with the

[2] See Morris Swadesh, Salish Internal Relationships, IJAL 16.157–67. The criterion for time depth is based on the amount of divergence found to have developed over given periods of time in languages whose history is known. Studies of this type have been made by the present author and confirmed by the more extensive work of Ephraim Cross, not yet published.

external relationship to Aleutian. Eskimo and Aleutian share a number of structural features and a scattering of important specific elements, including number and person suffixes and the relative case ending. But there are structural and phonetic divergences and the vocabularies are largely distinct. There can be no doubt that Eskimoan and Aleutian are eventually related, yet it is equally clear that the time depth of the relationship is very great. When the Eskimo dialects were still essentially indistinguishable, the Eskimo and Aleutian of that epoch must have been already quite divergent, probably more so than present-day English and Swedish.

1.3. A perspective of the internal relationships of Eskimo can best be obtained by choosing a limited number of dialects typifying the range of variation found within the stock. Jenness seems to have made a rather good selection in his comparative work, using:

East Cape of Siberia
Nunivak Island (off Southwest Alaska)
Inglestatt (northern coast of Norton Sound)
Cape Prince of Wales (westernmost Seward Peninsula on Bering Strait)
King Island (Bering Strait)
Point Barrow (northernmost point of Alaska)
Mackenzie River delta
Coronation Gulf
Labrador
Greenland

However, this series can be simplified. Wales and King Island are practically identical, as might be expected from their proximity. Inglestatt and Barrow turn out to be essentially the same despite the distance of over 400 miles that separates them. Likewise, Mackenzie and Coronation show few differences. Labrador can well be omitted, since it agrees generally with Coronation, while showing some points of contact with Greenland.

When we fit Unaaliq (southern coast of Norton Sound[3]) into the general picture, we find it to be quite close linguistically to Nunivak despite 300 miles intervening; it is very different from Inglestatt, 75 miles away. Hinz' Kuskokwim proves to be generally like Unaaliq and Nunivak but has a few special developments. Southern Alaska Eskimo, judging by the few forms cited in Thalbitzer (BAE-B 40), would seem to belong with Southwest Alaska, that is with Kuskokwim-Nunivak-Unaaliq. A sampling of Kotzebue Sound Eskimo shows it to belong with Inglestatt and Barrow. In the region around Hudson Bay, Birket-Smith's work indicates various local forms which, like Labrador, are transitional between Coronation and Greenland, some being closer to the former and some to the latter. Finally we note that Greenland shows considerable local variation within a common general range. For the purpose of our comparison, it is convenient to use the dialect recorded by Kleinschmidt, not only because of the excellence of the material but also because it is the most conservative phonologically. Among the present-day dialects, that of the Thule district in northwest Greenland comes closest to Kleinschmidt's dialect, while the area in which Kleinschmidt worked in southwest Greenland now shows some phonological innovations.

1.4. We take as typical dialects the following six: Unaaliq-Nunivak-Kuskokwim, Siberia, Wales - King, Barrow - Inglestatt, Mackenzie-Coronation, Greenland. In the accompanying table we show the form taken by certain elements illustrating key phonological developments. The study of these comparisons reveals the interrelationships of the Eskimo dialects.

For the purpose of establishing affinities

[3] Mr. Andrews was from St. Michael's Island. Unfortunately I have no information on the full area covered by this dialect name, but it evidently applies to a restricted part of Rasmussen's Ungalarlermiut.

between dialects, common innovations are of chief interest. Innovations affecting only one of our type dialects help to give that dialect or group its special character but do not indicate anything with regard to interdialectal affinities. For example the spirantization of intervocalic p k q to v γ ʀ and the voicing of s to z provides an unmistakable criterion for the identification of this group of dialects, but since no other dialects show this development it cannot be used as a criterion for connecting the Wales dialects with others. Similarly the extensive modification of consonant clusters sets the Greenland dialects from others. And the development of original s to c (like English ch) is a special characteristic of the southwest Alaska dialects. Our table does not list forms to show these one-dialect features but tries to find features that reappear in at least two of the type dialects.

Negative facts are generally of little interest in establishing relationships. That two dialects have both failed to change an original form does not necessarily prove any special affinity between them.

In the comparative table, the forms are from the dialect at the head of the column unless otherwise indicated in parentheses after the form. The abbreviations used are N = Nunivak, K = Kuskokwim, C = Coronation. Phonetic symbols used include χ ʀ for voiceless and voiced velar fricatives, ĭ for a reconstructed vowel perhaps of central quality recognizable by its penchant for being lost in certain positions even in Proto Eskimo times and for its neutral effect on t in dialects which assibilate t after i. Greenland spirants v γ ʀ and to some extent l are subject to automatic unvoicing in consonant clusters. In the SW Alaska and Siberian dialects, j varies according to phonetic position between the sounds of English y and z.

Sample Phonologic Developments in Eskimo Dialects

Proto Eskimo	Unaaliq	Siberia	Wales	Barrow	Mackenzie	Greenland	Meaning
inuk	juk	juk	inuk	inuk	inuk	inuk	person
taɬiq	taɬiq	taɬiq	taliq	taliq	taliq	taliq	arm
avɬa	aɬɬa	aɬɬa	alla	alla	alla	avla	other
itiγaq	itiγaq	itiγaq	itiγaq	isiγaq	itiγaq	isiγaq	foot
ĭtiq	tiq	tiq	itiq	itiq	itiq	itiq	anus
ĭmiq	miq	miq	imiq	imiq	imiq	imiq	water
sitaamat	ctaamat	staamat	sitamat	sisamat	sitamat	sisamat	four
siɬa	cɬa	sɬa	sila	sila	sila	sila	weather
qaqʀuq	χuq	χuq	qaqʀuq	qaqʀuq	qaʀjuq	qaʀʃuq	arrow
qaʀɬuq	qaχɬuq	qaχɬu	qaqlu	qaqlu	qaqlu	qaʀluq	upper lip
iji	ii	ii	iji	iji	iji	iʃi	eye
qantaq	qantaq		qata-uvaq	qattaq	qattaq	qattaq	dish
uŋpik	uŋpik	ukpik (prob. borrowed)	ukpik	ukpik	ukpik	uvpik	snow owl
kumlu	kumluq(K)	kumlu	kuvlu	kuvlu	kuvlu	kuvlu	thumb
aŋli- < aŋĭ- *large*	aŋli-	aŋli-	aγli-	aγli-	aγli-	aγli-	grow
siitquq	ciisquq	siiχquq	siitquq	siitquq	siitquq	siiʀquq	knee
pamĭjuq	pamjuq		pamiuq	pamiuq	pamiuq	pamiuq	tail
ukĭjuq	uksuq	uxsuq	uγiuq	ukiuq	ukiuq	ukiuq	winter
patliq	palliq(N)		palliq	palliq	palliq(C)	patliq	willow

The phonologic material shows an unmistakable cleavage between two groups of dialects, which may be conveniently called the Yupik and Inupik divisions by reference to their treatment of the root for *human being* (juk versus inuk); these are the words for *real person* or *Eskimo* in Kuskokwim and Barrow respectively. The principal

phonologic features of Yupik are: loss of initial ĩ; loss of i and sometimes a between consonants of similar articulation, preservation of the distinction between voiceless ɬ and voiced l, retention of nasals in clusters like ml ŋl, conversion of j into s in certain sequences. The Inupik division maintains ĩ as i initially, merges ɬ and l (voiceless and voiced may be automatic positional variants), converts nasals to spirants in clusters like ml (which becomes vl). In only a few cases do we find apparent affinities which cut across the two groups. The similar development of tq in Siberia and Greenland is doubtless a coincidence, perhaps even a convergence thru a different set of intermediary steps. The change of tl to ll in Unaaliq and most of the Inuk dialects may very well represent a relatively recent change which diffused across the language boundary.

The dichotomy shown by phonology is also reflected in vocabulary, in that we frequently find a given element for a certain meaning in the Yupik division but another root altogether for the same meaning thru the dialects of the Inupik division. A few examples are: for *day* Unaaliq iʁ-niq, Siberia iχ-ta: Wales, Barrow, Mackenzie, Greenland uvluq; for *tongue* U. ulu: Wales uʁaq, B.M.G. uqaq; for *brain* U.S. iłaquq, W. qaʁitaq, B. qaqisaq, M. qaʁitaq, G. qaʁasaq; for *what* U. ca-, S. sa-: W.B.M.G. su-.

The dichotomy between Yupik and Inupik is clear and geographically abrupt. This finding confirms and emphasizes what Jenness already sensed (IJAL 4.168): 'The Cape Prince of Wales dialect . . . is of special interest because it provides a link between the dialects to the north and east and the apparently very different dialect of the Yukon Delta recorded by Father Barnum.' We cite this remark for its reference to the 'very different' nature of southwest Alaskan Eskimo. It is likely that the transitional character of the Wales dialect noted by Jenness is due to diffusional influences between Wales and its neighbors in relatively recent times, since we find nothing in this dialect which minimizes the depth of its separation from Yupik Eskimo.

It has long been customary to speak of the Eskimo dialects. We now see that it may be correct to recognize two separate languages with dialectal variations in each.

THE PROTO-GULF WORD FOR *WATER* (WITH NOTES ON SIOUAN-YUCHI)

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1. Introduction to reconstructions
2. In Proto-Muskogean
3. In Proto-Gulf
4. In the Eastern Group of Hokan-Siouan
5. In Timucua
6.1. In Proto-Siouan
6.2. Other comparisons
6.3. Preliminary evidence for Siouan-Gulf
7. Possible relationship of Yuchi to Siouan and Siouan-Gulf

1.1 The term 'Gulf' has been adopted to refer to the Muskogean family of languages plus Natchez, Tunica, Chitimacha, and Atakapa. The Muskogean languages were formerly spoken in the southeastern part of the United States, while the remaining languages were spoken along the lower reaches of the Mississippi River and the adjacent coast of the Gulf of Mexico. At the present time the extant Muskogean languages are spoken in Oklahoma (Creek, Choctaw, Chickasaw, and Hitchiti), in Louisiana (Choctaw and Koasati), in East Texas (Alabama and Koasati), in Mississippi (Choctaw), and in Florida (Creek and Mikasuki, the languages spoken by the so-called Seminole Indians). Apalachee, an extinct Muskogean language on which we have a limited amount of material, was formerly spoken in Florida.

The non-Muskogean languages mentioned above are either extinct or virtually so. The last two remaining speakers of Natchez live among the Cherokee in eastern Oklahoma (former habitat: western Mississippi), the last speaker of Tunica lives in central Louisiana (former habitat: northwestern Mississippi), and the last speaker of Chitimacha lives in southern Louisiana, the original habitat of the tribe. Atakapa, formerly spoken in southwestern Louisiana, is now completely extinct.

1.2. The possibility that these languages are somehow related, though distantly, can scarcely be considered a new idea. In 1918 Swanton published a bulletin in which he presented a number of resemblances between Tunica, Chitimacha, and Atakapa,[1] languages which prior to that time were thought to be unrelated to each other or to anything else. In this same paper he proposed the term 'Tunican' to denote a linguistic stock composed of these three languages.

In 1924 Swanton also postulated the relationship of Natchez to the Muskogean family.[2] As a result of this postulation he often refers to Natchez as a Muskogean language. This nomenclature is, however, misleading because Natchez must be compared with Proto-Muskogean and not directly with the separate Muskogean languages. To get around this difficulty it is better to speak of a Natchez-Muskogean stock composed of (1) Natchez, and (2) the Muskogean family of languages.

In 1929 a much more sweeping series of connections for the languages under discussion was proposed by Sapir in an encyclopedia article of major theoretical importance to North and Central American comparative linguistics. In this article Sapir includes Natchez-Muskogean, Tunican, and also a great many other languages and language families, stretching from the Atlantic

[1] John R. Swanton, A Structural and Lexical Comparison of the Tunica, Chitimacha, and Atakapa Languages, BAE-B 68 (1918).

[2] Swanton, The Muskhogean Connection of the Natchez Language, IJAL 3.46–75 (1924).

to the Pacific, in his proposed Hokan-Siouan superstock.[3]

However, in spite of all these promising leads and fruitful suggestions for future investigation, no rigid demonstration of any of these relationships was attempted until quite recently. The most significant paper to appear so far is Swadesh's Phonologic Formulas for Atakapa-Chitimacha (1946),[4] in which he attempts to demonstrate a genetic relationship between Atakapa and Chitimacha by presenting over two hundred and fifty sets of cognates with proposed reconstructions for a prototype language from which he assumes these two to have been derived. However, since Atakapa and Chitimacha are probably not more closely related to each other than they are to Tunica and other languages of the Gulf stock, Swadesh's paper has certain limitations, particularly in regard to (1) the accuracy of some of the individual reconstructions and (2) the actual cognation of certain words. Sometimes better cognates for a Chitimacha (or Atakapa) word can be found in one or more of the other Gulf languages causing the rejection of the assumed Atakapa (or Chitimacha) cognate. Nevertheless, the total number of assumed cognates is impressive, and even if half of them were rejected, the number would still be impressive. Therefore the only real criticism that can be made of Swadesh's paper is the basic assumption, namely that Atakapa and Chitimacha are derived from a common prototype language which he calls Atakapa-Chitimacha.[5]

Within the limits of Swanton's proposed Tunican stock, Sapir, in the article just cited, has assumed a different line-up, namely Tunica-Atakapa, with Chitimacha set to one side by itself as a member of the Tunican stock. However, this assumption would not yield results which are any better, comparatively speaking. In other words, I do not believe that Atakapa and Chitimacha are descended from a common prototype (Swadesh's assumption), nor that Atakapa and Tunica are descended from a common prototype (Sapir's assumption), nor even that Tunica, Chitimacha, and Atakapa are descended from a common prototype (Sapir's assumption based on Swanton's assumption). Instead, I have found that better results in setting up actual reconstructions can be achieved by comparing the various languages I have subsumed under the term 'Gulf' (viz., Muskogean, Natchez, Tunica, Chitimacha, and Atakapa) and treating them on a par. This is to be expected, I think, because the greater the number of languages that can be brought in for comparison, the greater the accuracy of the hypothetical reconstructions. On the other hand, since these languages are not closely related and since most of them were recorded at a time when they were already on the point of dying out, the total number of cognates that can be arrived at when all are compared is much less than that which can be arrived at by comparing any two of them.

It must be added at this point that it is not my intention to maintain that Gulf consisted ONLY in the languages I have listed. But other additions cannot be made with certainty until the researches now

[3] Edward Sapir, Central and North American Indian Languages, in Encyclopedia Britannica, 14th edition, 5.128–141, 1929. Reprinted in Selected Writings of Edward Sapir, ed. by David G. Mandelbaum, pp. 169–178, University of California Press, 1949.

[4] Morris Swadesh, Phonologic Formulas for Atakapa-Chitimacha, IJAL 12.113–126 (1946). See also Swadesh, Atakapa-Chitimacha *k^{w}, IJAL 13.120–121 (1947).

[5] Swadesh is well aware of some of the difficulties involved in his premise, for he says: "It is clear that the eventual inclusion of Tunica and still other languages in the study is likely to refute or seriously modify many details of our present results. Nevertheless, it does not seem justified to hold back what has already been worked out until time and opportunity may permit further comparison, and it is therefore offered precisely in the hope that its errors and shortcomings may bring forth correction and improvement" (Phonologic Formulas . . . , p. 113).

begun have been carried much further. Hints about possibilities for future investigation, however, are given in sections **4–7** of the present paper.

1.3. The present writer has made field recordings of several of the Gulf languages, viz., Tunica, Natchez, and some of the Muskogean languages (especially Creek and Koasati). In the course of working on these languages, certain points of resemblance were observed which made the interrelationships suggested by earlier workers appear plausible, and I have therefore been engaged in gathering material bearing on this problem over a period of several years.

One of the most interesting sets of cognates so far worked out is that for the word for *water*, and it has for this reason been chosen for detailed discussion in this paper. It is interesting not only because cognates appear in all of the Gulf languages but also because some of the languages have more than one derivative. Further than this, having arrived at a Proto-Gulf reconstruction for the word, it then becomes possible to examine words of the same meaning in Timucua, Siouan, and Yuchi (languages which Sapir thought might be connected with Muskogean) with a view to determining whether the words for *water* in those languages can be assumed to be related or not (see sections **4–7**).

2.1. The Muskogean words for *water* are presented first and followed later (**§3.1**) by the cognate words in the remaining Gulf languages.

PROTO-MUSKOGEAN

Western Division

Choc.: uka *water*; uk-, preverb, *in the water*[6]

Eastern Division

Apal.: uk- *water* in uk-cikiti (oc chiquiti) *water-port*

Ala.-Koas.: uki *water*; Koas. u ·- *in the water*

Hitch.: uki- *water* (in compounds)

Cr.: úy-wa *water*; ak-, akk- *in the water*

Reconstructed PM: *ak^{w}i > *aku ~ *uki; preverb *ak^{w}- ~ *uk-.

The variant PM reconstructions are necessary to explain the development of the word in the various Muskogean languages. The form *ak^{w}i is assumed to be the oldest. In the Western division[7] *ak^{w}i > *aku through labialization of i to u and consequent delabialization of k^{w} to k (see Choc., **§2.2** below). In the Eastern division *ak^{w}i > *uki through labialization of the initial a to u and consequent delabialization of k^{w} to k (see Apal., **§2.3**; Ala.-Koas., **§2.4**; Hitch., **§2.5**; and Cr., **§2.6** below).[8] The two forms *aku (Western) and *uki (Eastern) cannot be equated except by assuming an earlier *ak^{w}i; this older form is also substantiated by comparison with more distant languages (see **§3.1**).

The development of these forms in the separate Muskogean languages is described below.

2.2. Choc. uka is < PM (Western division) *aku with metathesis, a not uncommon feature of the Muskogean languages. Cf. Choc. ufi *dog*, metathesized < *ifu < earlier *ix^{w}a, as evidenced by Koas. ifa, Cr. ífa.

The Choc. preverb uk- *in the water* is < *uk- < earlier *ak^{w}- (cf. the Cr. preverb ak-, **§2.6**).

2.3. The available material on Apal. is very meagre. The reasons for placing Apal.

[6] The following abbreviations are used for the names of these languages: Choc., Choctaw; Apal., Apalachee; Ala., Alabama; Hitch., Hitchiti; Cr., Creek (or Muskogee). The forms quoted here are taken from my own field notes except where otherwise noted.

[7] Mary R. Haas, The Classification of the Muskogean Languages, in Language, Culture, and Personality, ed. by Leslie Spier, pp. 41–56, Menasha, Wisconsin, 1941.

[8] Note that PM *k^{w} normally > b in Choc., Ala., Koas., and Hitch.; see Haas, The Development of Proto-Muskogean *k^{w}, IJAL 13.135–137 (1947). However, since *k^{w} was delabialized to *k in both the Eastern and the Western division prototype words, it has therefore remained k throughout.

in the Eastern division have been presented in a previous paper.[9] The word for *water* has been found only in the compound uk-cikiti (oc-chiquiti) *water-port*. The word uk- is < PM (Eastern division) *uki < earlier *ak^{w}i.

2.4. Ala.-Koas. uki is < PM (Eastern division) *uki < earlier *ak^{w}i. The Koas. preverb u·- is probably contracted < *uk- < earlier *ak^{w}-. It may be freely combined with verbs; note u·humpani *to play in water* < u·- + humpani *to play*.

2.5. Hitch. uki- (preserved in full only in compounds) is < PM (Eastern division) *uki < earlier *ak^{w}i. When pronounced in isolation the Hitch. word is uk-i, in which the final -i is a nominal suffix used with all nouns and is not to be connected with the final -i of the prototype word. The final -i of the prototype word is, however, preserved in compounds, e.g. uki-hatki *ocean* (< *white water*).

2.6. Cr. uy- in úywa is < PM (Eastern division) *uki < earlier *ak^{w}i with loss of the k and consequent conversion of i to y. The suffix -wa is found with many, though by no means all, other nouns, e.g. hunánwa *man* (cf. Choc. nakni, Ala.-Koas. na·ni), fúswa *bird* (cf. Choc. huši, Koas. fu·si), and ahá·hwa *walnut* (cf. Choc., Ala., Koas. ha·hi), but its historical origin is at present obscure.

The Cr. preverb ak- bears no resemblance to the Cr. noun-stem uy- and it is impossible to show any phonological connection between them on the descriptive level. On the historical level, Cr. ak- is < PM *ak^{w}-; PM *k^{w} regularly > Cr. k.[10] The prevocalic variant akk- is formed by geminating the final consonant; cf. Cr. is- ~ iss-/V *by means of*, Cr. uh- ~ uhh-/V *on*. The preverb ak- ~ akk-/V may be freely combined with verbs, e.g. aknafkita *to hit . . . in water* < ak- + nafkita *to hit . . .*; akkichitá *to shoot at . . . in water* < akk- + ichita *to shoot at . . .*.

Note that the Cr. preverb ak- is the only morpheme meaning *water* in any Muskogean language which has preserved the a of the prototype word in its original initial position. It is therefore the most archaic form preserved anywhere in Muskogean. Choc. uka preserves the a-vowel, but it has been metathesized.

3.1. The reconstructed PM forms and the cognates found in the remaining Gulf languages are listed together below.

PROTO-GULF

PM: *ak^{w}i > *aku ~ *uki *water*; preverb *ak^{w}- ~ *uk- *in the water*

Nat.: kuN *water*[11]

Tun.: wi'ši *water*[12]

Chit.: ku$^{?}$ *water*; ku·n- in ku·n$^{?}$atin *Mississippi* (< *big water*); $^{?}$ak- in $^{?}$akšuš *cypress* (< *water-tree*). Probably also connected is ni-, verb-root, as in ni-y-, verb-stem, *to enter water*.[13]

At. WD: ak *juice, sap*; ED: ak *water*, akon(st) *river*; Ak.: koko *ocean*[14]

Reconstructed Proto-Gulf: *ak^{w}in, poss. *ak^{w}ini *water*

The development of the words in the various Gulf languages (other than Muskogean) is described below.

3.2. Nat. kuN is < PG *(a)k^{w}in or *(a)k^{w}in(i) with loss of the parenthesized elements. The i following k^{w} has become labialized to u and the k^{w} has consequently become delabialized to k. There is evidence for this latter assumption within Nat. itself; for although Nat. has a consonant phoneme k^{w}, it never appears before a

[9] Haas, The Position of Apalachee in the Muskogean Family, IJAL 15.121–127 (1949).

[10] Haas, The Development of Proto-Muskogean *k^{w}.

[11] Haas, Natchez Vocabulary, unpublished ms.

[12] Haas, Tunica, Handbook of American Indian Languages, vol. 4, 1941.

[13] Swadesh, Chitimacha Vocabulary, unpublished ms.; a copy of this was kindly loaned to me by the author.

[14] Gatschet and Swanton, A Dictionary of the Atakapa Language, BAE-B 108 (1932).

rounded vowel. Cf. also PG *k^{w}ara *to drink, swallow* (PM *k^{w}ala-; Tun. ko'ra; At. kul, kol) which > Nat. kol- *to gulp*. If a rounded vowel does not result, PG *k^{w} > Nat. k^{w}, e.g. PG *nukk^{w}ayti *neck, throat* (PM *nukk^{w}i; Chit. kiti; At. koy, kuy) which > Nat. k^{w}aht.

Nat. has two alveolar nasal phonemes, voiced n (occurring in all positions except prior position in a final consonant cluster), and voiceless N (occurring in all positions occupied by n except initial position). The circumstances under which PG *n> Nat. n or N, as far as they have been worked out, are as follows:

(1) PG *n > Nat. n in initial position, e.g. PG *nemak^{w}a *fat, grease* (PM *nihaka or *nihak^{w}a; Tun. ma'ka; Chit. nema; At. eŋ) > Nat. nehk^{w}.

(2) PG *n > Nat. n between vowels, e.g. PG *enu *name* (Chit. nu-yt- *to call by name*; At. eŋ *name*) > Nat. ʔinu- (*one's*) *name*.

(3) PG *n > Nat. N when, through vowel loss, N is followed by a consonant, e.g. PG *enuti ~ *eniti *tooth* (PM *-nuti; Tun. -ni, -niri) > Nat. ʔeNt.

(4) PG *n also > Nat. N when, through vowel loss, N occurs in final position, e.g. PG *enani *fish* (PM *NaNi/u; Tun. ni'ni; Chit. ni- in ni-pi *fish-scale*; At. nti, andi *fish, catfish*) > Nat. ʔeN *fish*. In view of these rules Nat. kuN *water* may constitute evidence for a PG reconstruction *ak^{w}ini rather than *ak^{w}in; cf. also the discussion of Chit., §**3.4** below.

3.3. Tun. wi'ši poses some interesting problems. My present hypothesis is that wi'ši is < *k^{w}ix^{w}i, reduplicated form of *k^{w}i with fricativization of *k^{w}i to *x^{w}i between vowels. If this hypothesis is correct, *k^{w}i is < PG *(a)k^{w}i(n) or *(a)k^{w}i(ni) with loss of the parenthesized elements.

PG *k^{w} appears to have more than one reflex in Tunica. In certain instances PG *k^{w} > Tun. w, e.g. PG *k^{w}ana *to want* (PM *k^{w}anna; At. ko) > Tun. '-wana. In other instances PG *k^{w} > Tun. k, e.g. PG *k^{w}ara *to drink, swallow* (PM *k^{w}ala-; Nat. kol-; At. kul, kol) > Tun. ko'ra *to drink*.

PG *x^{w} sometimes > Tun. š (probably only before i), e.g. PG *ix^{w}ilu ~ *ik^{w}ilu *screech owl* (PM *ix^{w}ulu; Nat. ʔukulul-uh) > ši'lu-ka *screech owl*. Note that Nat. points to PG *k^{w}, while PM and Tun. point to PG *x^{w}. This appears to be further evidence for the fricativization of *k^{w} to *x^{w} between vowels in certain cases, as suggested above.

3.4. Chit. has preserved more derivatives of PG *ak^{w}in or *ak^{w}ini than any other Gulf language. Different parts of the full PG form are preserved in different derivatives. But if all the derivatives are taken together, all the parts appear to be preserved. Thus ku? (the final ? is historically non-significant)[15] is < PG *(a)k^{w}i(n) or *(a)k^{w}i(ni) with loss of the parenthesized elements, labialization of i to u, and change of k^{w} to k; ku·n- (in ku·n?atin *Mississippi*) is < PG *(a)k^{w}in or *(a)k^{w}in(i); and ?ak- (in ?akšuš *cypress*) is < PG *ak^{w}(in) or *ak^{w}(ini). If the verb-root ni- (as in ni-y-, verb-stem, *to enter water*) is historically related to the other forms, it is < PG *(ak^{w}i)ni and is especially important in being the only form which gives clear evidence for the inclusion of the final i in *ak^{w}ini. (See also the discussion of Siouan in §**5.1** below.) At present I have no hypothesis to explain why Chit. has preserved the word for *water* in so many different forms. Stress differences may account for it, but in Chit. itself stress is non-phonemic, and the prosodic features of PG require further investigation before stress can be definitely postulated on that level.

Chit. ku? may show loss of n < an earlier *kun (cf. ku·n- in ku·n?atin *Mississippi*). A possible parallel instance is seen in Chit. ?i? which may be from an earlier *?in

[15] Swadesh, Chitimacha, in Linguistic Structures of Native America, VFPA b. 312–336 (1946). The final ? is discussed on p. 316.

< PG *enuti ~ *eniti (PM *-nuti, Nat. ʔeNt, Tun. '-ni, '-niri).[16] A postvocalic n is preserved in Chit. wen? *tongue*, but this may be < PG *l; note Tun. '-lu, At. ne·l *tongue* which together with Chit. wen? may be < PG *n-welu (?).

3.5. At. WD ak *juice, sap* and ED ak *water* are from PG *ak^{w}(in) or *ak^{w}(ini) with loss of the parenthesized elements. Other evidence showing that PG *k^{w} > At. k is seen in At. ko *to want* < PG *k^{w}ana (PM *k^{w}anna; Tun. '-wana) and in At. kol, kul *to swallow* < PG *k^{w}ara *to drink, swallow* (PM *k^{w}ala-; Nat. kol-; Tun. kɔ'ra).

Ak. koko *ocean* is probably < reduplicated *k^{w}ik^{w}i < PG *(a)k^{w}i(n) or *(a)k^{w}i(ni). Note that PG *k^{w}i > Ak. ko. Other evidence in Ak. which indicates that PG *k^{w}V > Ak. ko is seen in Ak. koy (coé) *neck*, WD koy, kuy *throat* < PG *nukk^{w}ayti *neck* (PM *nukk^{w}i; Nat. k^{w}aht; Chit. kiti). The same rule probably applies to all At. dialects (see the examples in the immediately preceding paragraph), but the material on the WD sometimes has variant writings showing ku as well as ko.

ED akon- in akon(st)[17] *river* is probably < PG *ak^{w}in or *ak^{w}in(i). If so, it is one of the most important forms to be found in any of the Gulf languages, for it preserves the PG form virtually intact. In view of this fact it is highly regrettable that the dialect is extinct and that our material on it is so pitifully meagre. It is possible that the ED would have been more important for comparative purposes than the WD, though it is the latter on which we have the most material.

3.6. An interesting feature of the Gulf languages, and one that has been discovered in other sets of cognates besides the one for *water* discussed here, is that the beginning part of the reconstructed form may be preserved in one language, the middle in another, and the end in still another; or, occasionally, two or more of the various parts may be preserved in different derivatives occurring in the same language (see the discussion of Chit. in §**3.4** above). In other words, the prototype form is preserved in pieces, rarely in its full form; but see the discussion of Eastern Atakapa akon(st) *river* in §**3.5.**

The prototype form *ak^{w}in or *ak^{w}ini has been preserved in the following pieces: (1) *ak^{w}, (2) *ak^{w}i, (3) *k^{w}i, (4) *k^{w}in, and possibly (5) *ni. Note that these pieces form a series which enables us to reconstruct the prototype form in its entirety, and that (4) *k^{w}in is crucial, because it preserves the n and allows us to make the tentative addition of (5) *ni to the list. The chart shown below has been prepared to show where and in what function the various pieces have been preserved in the various languages. The Eastern Atakapa form akon(st) is not included in the chart because it preserves the PG form virtually intact.

[16] In his paper, Phonologic Formulas . . . Swadesh connects Chit. ʔiʔ *tooth* with At. oc *tooth, grain*. It seems to me that it is better to connect the Chit. form with the PM, Nat., and Tun. forms quoted here and to assume that At. oc is not cognate with the other languages.

[17] The parentheses in the word akon(st) appear in A Dictionary of the Atakapa Language, but no explanation is given. Since Swanton does not use hyphens to indicate bound forms, I cannot be sure from the way the evidence is presented that akon(st) was actually used alone in the Eastern dialect, or whether it appears only in the compounds quoted under the main entry (see p. 26, col. 2).

PG *ak^{w}ini

	*ak^{w}	*ak^{w}i	*k^{w}i	*k^{w}in	*ni
PM	preverb	noun (free)	——	——	——
Nat.	——	——	——	noun (free)	——
Tun.	——	——	noun (rdpl.)	——	——
Chit.	noun (bound)	——	noun (free)	noun (bound)	verb-root
At. WD	noun (free)	——	——	——	——
Ak.	——	——	noun (rdpl.)	——	——

4.1. In 1929 Swanton suggested that Timucua, an extinct language of Florida, and Tawasa, an extinct dialect of Timucua, might be related to the Muskogean family.[18] Following this lead, Sapir included Timucua (though with a query) as a member of the Natchez-Muskogean stock when he set up his proposed Hokan-Siouan superstock.

Another interesting feature of Sapir's proposed Hokan-Siouan superstock was the postulated Eastern Group composed of (1) Siouan-Yuchi and (2) Natchez-Muskogean, including Timucua with a query, as already mentioned.

4.2. In view of these hypotheses of Sapir and Swanton, it will be of interest to examine the words for *water* in these languages and to compare them with the reconstructed PG *ak^{w}in or *ak^{w}ini. The different languages are taken up in the following order: Timucua (§**5.1**), the Siouan family (§**6.1**), and Yuchi (§**7.1**). It is to be remembered that the comparisons with these languages, though quite plausible as far as the word for *water* is concerned, are nevertheless tentative, since, unlike the Gulf languages compared in the previous section, the comparisons shown below are not backed at present by a body of other comparisons.

5.1. The Timucua word for *water* is ibine[19] and it fits surprisingly well with the PG *ak^{w}ini. If the Tim. word is actually related, then it is unusual in that it has preserved all three syllables of the prototype word. Note also that we should have to assume that the first vowel of the Tim. word has assimilated to the second vowel, that PG *k^{w} corresponds to Tim. b, that PG *i corresponds to Tim. i (or e; in final position only?), and that PG *n corresponds to Tim. n.

5.2. The question then arises: Is Timucua a Gulf language? The evidence contained in the word for *water* gives us good reason to look further into this interesting possibility. But in spite of the highly plausible nature of this one comparison, it is insufficient to allow us to be positive about considering Timucua to be a Gulf language. This is all the more true because it has turned out to be difficult to find other cognates which appear similarly close to other PG reconstructions so far worked out. Further researches into Proto-Gulf may some day change the picture.

6.1. The words for *water* taken from the more important Siouan languages[20] are given below followed by a proposed reconstruction.

PROTO-SIOUAN

Dakota (Teton): mní
Omaha-Ponca: mini
Osage-Quapaw: ni
Iowa-Oto: ni
Winnebago: ni
Mandan: miní
Hidatsa: wirí; Crow bire
Biloxi: ani; Ofo ani; Tutelo mani
Reconstructed Proto-Siouan: *miní ~ *winí (or *miní < earlier *winí)

Hans Wolff, who has recently been making important contributions to comparative

[18] Swanton, The Tawasa Language, AA 31.435–453 (1929).

[19] Ibid.

[20] For a list of the Siouan languages and important dialects, see C. F. Voegelin, Internal Relationships of the Siouan Languages, American Anthropologist, 43.246–249 (1941).

The Siouan words for *water* quoted here are taken from the following sources: J. Owen Dorsey, On the Comparative Phonology of Four Siouan Languages, Annual Report of the Smithsonian Institution for the Year 1883, pp. 919–929; J. Owen Dorsey and John R. Swanton, A Dictionary of the Biloxi and Ofo Languages, BAE-B 47 (1912); E. Kennard, Mandan Grammar, IJAL 9.1–42 (1936); Robert H. Lowie, Hidatsa Texts, with Grammatical Notes and Phonograph Transcriptions by Zellig Harris and C. F. Voegelin, Prehistory Research Series of the Indiana Historical Society, vol. 1, no. 6, 1939; Robert H. Lowie, The Crow Language, UCPAAE 39, no. 1, pp. 1–142 (1941); Paul Radin, Winnebago Dictionary, unpublished ms. (kindly loaned to me by the author); Hans Wolff, Comparative Siouan III, IJAL 16.168–178 (1950).

Siouan linguistics, reconstructs PS *m-ní.[21] He explains reconstructions in which a sequence of consonants is separated by a dash, e.g. *m-ní, as being what he calls " 'open juncture' clusters." He adds that such clusters are "characterized by the presence of an intrusive, non-phonemic, vowel, probably schwa, which is heard between the consonants which constitute the cluster."[22]

In contrast to Wolff's reconstruction *m-ni, my own reconstruction *mini ~ *wini inserts a full vowel between the two consonants. Some of the daughter languages actually have the i-vowel here, but the Ohio Valley subdivision (Biloxi, Ofo, and Tutelo) has a different vowel, namely a, either with the initial m preceding (Tutelo), or without it (Biloxi and Ofo). It is highly probable that the Proto-Ohio Valley form was *məní (or *m-ni, as Wolff would write it) but this would not prejudice in any way an earlier reconstruction *mini; see also the remarks in §6.3.

It is obvious that my reconstruction *mini is influenced by my PG reconstruction *akʷini. But if Siouan is related to the Gulf languages (as I think further researches may be able to demonstrate; see also §6.2), then PS *mini is certainly related to PG *akʷin or *akʷini. It should also be noted that PS *mini is probably either a variant of *wini, or else it is from an earlier form *wini (from which *w > *m through assimilation to the nasal of the following syllable). In this connection it should be noted that although Wolff reconstructs both *m and *w for Proto-Siouan, he shows that they (and other sonorants) "represent areas of great instability in Siouan phonology" and further "that allophone b of *m thus overlapped with allophone β of *w in several dialects."[23] Hence as far as Siouan phonology is concerned there is nothing bizarre about a reconstruction *mini ~ *wini.

[21] Wolff, op. cit., p. 168.

[22] Ibid., p. 173.

[23] Wolff, Comparative Siouan II, IJAL 16.113–121 (1950). These quotations appear on p. 113.

6.2. At the present stage of investigation a few other plausible connections between Proto-Gulf or Proto-Muskogean and Proto-Siouan have been uncovered. These are far from sufficient to postulate a definite relationship, but they serve to give us hope that further diligence may uncover other connections. Note the following:

(1) PS *kų ~ *ką (Teton kų *to covet*, Ponca ką- *to wish*, Osage kǫ- *to want*) and PG *kʷana *to want* (PM *kʷanna, Tun. '-wana, At. ko).

(2) PS *rá-ska ~ *rá-spa *to bite* (W)[24] and PG *ćaka *to chew* (PM *ya-šaka, Nat. caka·-, Chit. čakumt-, At. cak).

(3) Dak. ksa *to break* and PG *kaču ~ *keču *to break* (PM *kaču, Nat. kec-, Tun. kahču, At. kec).

(4) *nųxe *ice* (W) and PM *Naxʷi *winter*, Chit. nakt *ice*.

(5) PS *kʸaki *hand* (W) and PM *-(m)-kʷaki ~ *-(l)kʷaki *hand*.

(6) PS *w-té ~ *w-tá *cow, buffalo* (W) and Nat. wasta·N, wasta·- *bovine*, Chit. waštik *bovine*.

6.3. If other connections between the Gulf languages and Siouan can some day be uncovered, then it may be possible to combine the two in a larger group which could be called Siouan-Gulf. This would be similar to Sapir's assumed Eastern Group (§4.1) except that Tunica, Chitimacha, and Atakapa constitute additional inclusions. Note that Tunica is included in the comparisons numbered 1 and 3 above (§6.2); Chitimacha in nos. 2, 4, and 6; Atakapa in nos. 1, 2, and 3.

Note that if we assume the existence of a Siouan-Gulf prototype language, we can set up a PSG reconstruction *akʷini for the word for *water*. Within Gulf itself the evidence for the final i is not very strong, but when Siouan is included the matter is clinched. (Timucua would also reinforce such a reconstruction, but we cannot yet be

[24] All Siouan reconstructions followed by (W) are taken from Wolff, op. cit.

sure that Timucua belongs either in Gulf or in Siouan-Gulf.)

There is another and broader advantage in assuming a Siouan-Gulf connection, and that is that Gulf will probably help throw light on Siouan consonant clusters, particularly those of the type Wolff calls "'open juncture' clusters." I believe that a PS reconstruction *mini ~ *winí for *water* is to be preferred to a reconstruction *m-ní, especially since some Siouan languages appear to have preserved the first i. Yet the stimulus which provided the fuller reconstruction came from outside of Siouan. Furthermore, because of this outside evidence and because of the fact that some Siouan languages have preserved the first, it appears advisable to re-examine Proto-Siouan open juncture clusters with a view to determining whether or not a vowel cannot be inserted, in some cases at least, from evidence within Siouan.

7.1. The Yuchi word for *water* is ce (tse).[25] If Yuchi is related to the Gulf languages (perhaps in the larger framework of Siouan-Gulf), then ce may be < earlier *k^{w}i, which in turn may be < PSG *(a)k^{w}i(ni). If so, *k^{w} > Yuchi c (only before front vowels?) and *i > Yuchi e (or perhaps it was nasalized *į which > Yuchi e).

7.2. At the time he postulated his Hokan-Siouan superstock Sapir assumed a close relationship between the Siouan family and Yuchi, putting them both together in a larger stock which he called Siouan-Yuchi. No evidence for this assumption has ever been presented. Note that the evidence contained in the word for *water* is neutral on this point. Indeed, if we had to work entirely without evidence from the Gulf languages and without the reconstructed PG *ak^{w}in or *ak^{w}ini, we should probably find it extremely difficult to connect Yuchi ce with PS *miní, or even with a variant *winí. Note also that it would be even more difficult to connect it with Wolff's reconstruction *m-ní. On the other hand, a connection between Yuchi ce and PSG *ak^{w}ini is at least plausible. Hence there is nothing in the words for *water* to point to a closer relationship between Yuchi and Siouan than between Yuchi and the Gulf languages; on the other hand, the lack of such evidence in one word is inconclusive.

7.3. If we were to leave the matter here, the possibility of a close relationship between Siouan and Yuchi might appear dubious. Therefore, even though the problem is somewhat apart from the main theme of this paper, I should like to call attention to the following comparisons which may point to a connection between Siouan and Yuchi:

(1) PS *nųpá *two* (W) and Yuchi nǫwé *two*

(2) PS *sepi *black* (W) and Yuchi ispí *black*

(3) PS *natu *brain* (W) and Yuchi go-tó *head*[26]

(4) PS *p-qa *bitter* (W) and Yuchi pagá *bitter*; cf. also Nat. pa$^{?}$ah- *bitter*.

No Gulf connections with the above words have been uncovered except where noted.

[25] Günter Wagner, Yuchi, Handbook of American Indian Languages, vol. 3.

[26] The Yuchi element go- is a prefix used with many other words as well.

A QUERY ON THE NOMINAL ORIGIN OF VERB STEMS IN ATHAPASKAN

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1. Apachean
2. Chipewyan
3. Mattole
4. Query

1. If memory serves me, Sapir was inclined to make offhand references to the possible nominal origin of verbs in Athapaskan; a stimulus for such a reference might be a stem in Navaho which had one shape when functioning as a noun (in word initial or after possessive prefixes), and the identical shape when functioning as a verb (always bound: appearing after prefixes peculiar to verbs). I do not remember that Sapir ever bothered to test this possibility by consulting his impressive array of Athapaskan dictionaries (largely in manuscript); rather, the possibility was suggested by the internal distribution of morpheme classes in one or another of the daughter languages, generally Navaho.[1]

On the basis of her experience with Navaho, Reichard expresses some doubt as to the wisdom of making a fundamental or ultimate distinction between noun stems and verb stems which may in some instances overlap as neutral stems and which therefore are not as consistently or as sharply distinguished as verb stems and noun stems are in some other American languages.[2]

Hoijer calls Navaho and the various Apache tongues of the Southwest 'Apachean languages', and summarizes evidence to show that they are 'a truly linguistic substock of the greater Athapaskan family', and notes in passing that 'Apachean verb stems appear to be nominal in origin', giving a half dozen examples. From the noun *tobacco* the verb *to smoke* is derived; from the noun *winter*, the verb *the year ages*; from the noun *sleep*, the verb *he sleeps*; and the noun for *foul odor* is related to the verb for *it is sour, salty*.[3]

2. For Chipewyan an analogous but much longer list of examples may be excerpted from Li's dictionary of morphemes.[4] This list represents a cross-classification of noun stems (N). By one set of criteria, N may be placed into one or another subclass (N_1, N_2, N_3, or N_4); by another set of criteria, noun stems from one or another of these sub-classes may be cross-classified as N_v. There is thus an overlap between N_v and verb stems (V).

A given verb stem (V) may be cited as a morpheme set of five closely similar forms. These 'stem variations', these 'different forms of a verb stem' are listed in a relative order for each V in Chipewyan, so that each successive form of the V is understood to be involved in marking each successive tense-aspect in the following order: '[1] the imperfective, [2] the perfective, [3] the future, [4] the customary (or repetitive), and [5] the progressive'. Whenever there is a double classification of V and N, the resemblance or identity is between N and one or another of the tense-aspect forms of V.

Each instance of identity (complete or partial) between N and V is presented in the

[1] Edward Sapir, Yale Seminar in Athapaskan, circa 1935.

[2] Gladys Reichard, personal communication, 1950; I had discussed Tübatulabal and other Uto-Aztecan languages by way of contrast.

[3] Harry Hoijer, The Structure of the Noun in the Apachean Languages, Actes du XXVIII Congres International des Américanistes, 173–84 (1948); The Southern Athapaskan Languages, AA 40.75–87 (1938).

[4] Fang-Kuei Li, A List of Chipewyan Stems, IJAL 7.122–51 (1933).

following order: the translation for the noun stem first, and then that for the verb stem. Thus, *eddy* and *water rushes, whirls as if it is boiling; twilight* and *to be grey; blood* and *to become red; charcoal* and *to mark with charcoal; paddle* and *to paddle (a canoe); club* or *heavy stick* and *to throw a club, a stick* or *to hit with a club, to club; darkness* and *to be dark* which is similar to *darkness comes; poker* and *to push (with a stick held in a certain way); foot* or *moccasin* and *to track; blister* and *water is stored up* (or *sand* or *flour*); *a cough* and *to cough; that which is vomited* and *to vomit; fat* and *to be fat; cold weather* and *to become cold (weather); copulation* and *to copulate with; a long time* and *to have such a length of time; sand* and *to crumble in powder* (transitive); *branches* and *to be many branched; bone* and *to feel like bones; glacier* and *a glacier is moving; hook* and *to hook (at); hand-game* and *to play the hand-game; dampness* or *moisture* and *to become moistened, to moisten; splinter* and *to split; gum* and *to put gum on; ear* and *to be with ears; cache* and *to store up; fire-wood* and *to dry (wood); vapor* or *mist* and *to soak, to wash, to get soaked*, as well as *to wet; abscess* and *an abscess is formed; wing* and *to make love* (figuratively) or *to flap the wings* (literally); *hiccough* and *to hiccough; song* and *to sing; fish hook* or *fishing place* and *to bend too much; crooked fingers* or *vulva sign* (insulting) and *to make vulva sign; anger* and *to be in a state of anger; porcupine quill* and *there are many sharp points striking out; urine* and *to urinate* or *to pour down in a stream; laugh* or *laughter* and *to laugh; smile* and *to smile; grass* and *to be hairy.*

Besides the preceding, there are instances in which N appears as the second morpheme of a word. Thus, *tent* (but after another morpheme, *web*) and *to hang and spread out; a word* or *language* (after a prefix) and *to speak* (after the same prefix which precedes N); *maggots* (after a prefix) and *to move; my husband* (*my man*) and *to have the length of; news* or *story* (after prefix) and *to tell the news, the story; fork* (*of a stick*) and *to fork* (*up*) or *pick up with a fork; scraper* and *to scrape (with a scraper); rocky cliff* and *to be steep; filings* and *to file* or *to sharpen; salt* and *to crumble into powder* (transitive); *a barrier* (*erected at the beaver runway by driving sticks into the mud*) and *to set a barrier, to bar; open water in winter* (*due to hot spring*) and *to be warm; a whip* and *to whip; a dark speck* or *spot* and *to be black; name* and *to give a name to; slippery ice* and *to be slippery; (wooden) nail* and *to nail, making some kind of framework; toilet paper* and *to wipe oneself; scent*, as well as *skunk* (or *nose*) and *to smell; boulder* and *to be round like a ball* or *to have a lump, a round protuberance; a lie* and *to tell a lie* or *to lie about something; beads* and *small insects lie* or *a bunch of beads lies; dry moss* and *to dry; my breath* and *to be choked; a whistle* and *to whistle; parchment* (*hair scraped skin*) and *to scrape; frost*, as well as *snow on the ground* (or, after prefix: *snow which has absorbed the blood of animals killed, used for food when supply is scarce*) and *to be frosted; gas from stomach* and *to rot* as well as *to have dysentery* or *to break wind; a log of wood which has been gnawed by beaver* and *to dishevel (hair); thick soup* and *it boils into soup* or *to make soup; impaler* (*a sharp-pointed stick set up by man-eater to catch persons sliding down hillside*) and *to be sharp at the end of a stick* as well as *to set up an impaler; brush* or *mop* (*for splashing water on canoe*) and *to make a splashy noise.*

There are also instances between N and V which are just as close in shape as the preceding, but for which noun-verb translation is not analogous in point of similarity. Li generally omits cross-reference to such less certain pairs. Thus, *trail* and *to be lonesome* (after given prefix); *young buck* and *to gallop, to jump (with both feet together); woman's private parts* and *to slide; steel* (*for striking flint in fire making*) and *two or more objects knock against each other or shake loose from the joint or base.*

3. For Mattole, Li cites forms of verb stems (V) in one section (V forms involved in marking '[1] the imperfective, [2] the perfective, [3] the progressive (usually used in the future), and [4] the optative'—cited in that order); in a following section he cites noun stems (N).[5] Some V are cited in the N section, or, where N are similar or identical to one or another form of V, back-reference to the V section is noted by Li. Thus, *mother* and *to marry; war* and *to go to war; snow* and *to snow.*

Some N may be paired with V, as above, in addition to those noted by Li. Thus, *urine* and *to urinate; grass* and *to make a basket; excrement* and *to defecate.* Other pairs show formal identity but are less certain because the connection in meaning, if any, is dubious (as *star* and *to hide; seeds* and *to dry*).

Some N may be paired with V, as above, but are cited only in sequence after another morpheme. Thus, *a small sifting basket* and *to shake; jay bird* and *to sit* (?); *a rope* and *to twist a rope; child* and *to name; water* and *to drink; spear* and *to spear; grizzly bear* and *to kill; huckleberry* and *to eat berries.*

4. Assuming that comparative work will show that all the above instances go back to a parent language in which each item is always preceded by verb prefixes—would this then argue for a general verbal origin of noun stems?[6] Assuming that the instances cited all go back to an original noun stem subsequently used with verb prefixes in addition—would this argue for a general nominal origin of verb stems? Assuming that instances of overlapping go back to a parent language in which some are exclusively preceded by verb prefixes while others function only as nouns (word initial and/or in sequence after possessive prefixes)—would the question of a general origin from either morpheme class be then excluded? Presumably, it would be said that developments in some daughter languages led to verbal prefixes being used with an original noun stem, while in other daughter languages an original verb stem—or rather one or another form of the verb stem—came to be used with noun inflections.[7]

Our best sample is from Chipewyan. Here N_v comprises those stems which are doubly classifiable as one or another form of verb stem (V) and also as one or another subclass of noun stem (N). This kind of statement could be made for very many New World languages; in fact, it might be postulated that every American Indian language which distinguishes N from V shows some instances of overlapping, of double classification. What is remarkable in Chipewyan—and, for that matter, in Athapaskan as a whole—is the magnitude of this double classification. Perhaps something approaching ten percent of all entries in A List of Chipewyan Stems are doubly classified as V and again as N.

[5] Fang-Kuei Li, Mattole an Athabaskan Language (The University of Chicago Press, 1930).

[6] Some time before the correspondence acknowledged above (fn. 2), Gladys Reichard generously sent me—for my beginning interest in Athapaskan languages—an old copy of a chapter of a Navaho grammar she was then writing entitled 'The Word'. I hesitate to cite an unrevised manuscript, but I must acknowledge at least that Dr. Reichard considers all the alternatives I have mentioned in this Query, even presenting data to support a verbal origin, though recognizing Sapir's justification in deriving verbs of motion from nomnial stems.

[7] Quite aside from the statistical question discussed in this paper, there can be no doubt that a distinction between noun stems and verb stems is demonstrable on a purely distributional basis for any of the daughter languages thus far described. Even though a 'possessive prefix' paradigm associated with a noun stem may largely coincide with a 'person prefix' paradigm associated with a verb stem, the distributional statement is quite contrastive: paradigm + N (noun stem) for nouns; for verbs, the person marking set of prefixes has a relative order position before V (verb stem), to be sure—but a relative order position to other prefix sets also (after some prefixes and preceding other prefixes).

The problem which Athapaskan poses is thus not limited in application to this one language family. On the one hand the morphological descriptions of the various native languages will generally give formal criteria for distinguishing one major morpheme class from another—only to add that there are (of course) instances of overlap. I would say that the favorite example cited is the noun stem for *urine* which has the same shape as the verb stem *to urinate*. However, the magnitude of such instances of overlap are generally not vouchsafed. It is hard to give the proper evaluation of quantifying terms used in linguistic statements: 'rarely' or 'a few' or 'many' may reflect a tradition of interpretation for a given language family rather than actual observation. The methodology of dealing with overlapping instances of major morpheme classes has been little discussed. The underlying data for implementing any particular methodology must be derived from morpheme lists. This provides an additional argument for the publication of dictionaries as well as grammars and texts.

KUTENAI IV: WORD CLASSES[1]

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0. Introduction
1. Marking of Word Classes
2. Full-Word Classes
3. Particle Classes
4. Class Markers
5. Stems
6. Summary

0. The word in Kutenai constitutes a fused unit on the sentence level of integration;[2] that is, words function as units within the frame of reference of the sentence,[3] and conversely, the internal structure of the Kutenai sentence is statable in terms of words and word distribution. In terms of internal structure, words may consist of one or more morphemes; in regard to the latter case, it was stated in Kutenai III that 'the criterion for the inclusion of more than one morpheme in one word is relative order: the order of morphemes within a word is fixed; word boundaries are set up between morphemes with free relative order.'[4] In the next paragraph of Kutenai III it was added that 'polymorphemic words consist of a word nucleus (theme, marked X, Y, W, according to the distribution type) of one or more morphemes, to which may be added one or more marginal and next-to-marginal morphemes (prefixes and suffixes, marked by morphological index numbers) in fixed relative order.'[5] As can be seen, the second definition narrows the first: fixed relative order as a criterion for the inclusion of more than one morpheme into one word applies specifically to marginal and next-to-marginal morphemes, and the relative order of morphemes within the word nucleus is not dealt with. At the same time, it is equally evident from the second definition that single-morpheme word nuclei and polymorphemic word nuclei are functionally equivalent; that is, the internal structure of the word nucleus is irrelevant from the standpoint of its distribution as a whole within the word. Polymorphemic word nuclei (themes) can therefore be considered morpheme clusters, i.e. fused units functionally equivalent to single morphemes, and the definition of the internal structure of the word can be amended to read: 'the criterion for the inclusion of more than one morpheme or morpheme cluster in one word is relative order: the order of mor-

[1] This is the continuation of a series of papers on Kutenai structure, begun in 1948 with Kutenai I: Phonemics, IJAL 14.37–42 (1948); Kutenai II: Morpheme Variations, IJAL 14.87–90 (1948); Kutenai III: Morpheme Distributions (Prefix, Theme, Suffix), IJAL 14.171–87 (1948).

Material on Kutenai was obtained during two summer field trips to the tribe: in 1946, under a grant from the Penrose Fund of the American Philosophical Society; and in 1950, under a grant from the Phillips Fund of the American Philosophical Society, supplemented by a subsidy from the Faculty Research Committee of the University of Oklahoma. This assistance is hereby gratefully acknowledged.

During the 1946 field trip, the Kutenai bands at Bonner's Ferry, Ida., Creston, B. C., and Cranbrook, B. C., were visited. In 1950, in addition to these, the remaining bands at Windermere, B. C., Tobacco Plains, B. C., and Elmo, Mont., were also visited. The present study is based on the results of both trips. It was discussed in detail with C. H. van Schooneveld, University of Oklahoma, whose valuable suggestions have helped greatly to improve organization and clarity of presentation.

[2] Much of the terminology used in this paper was first suggested by the author in Structure and Variation in Language and Culture, now in press with Proc. XXIXth Internat'l Congress of Americanists, New York, 1949.

[3] A formal definition of the sentence is reserved for a future paper.

[4] IJAL 14.171 (1948).

[5] Ibid.; for a definition of the theme, see below.

phemes and morpheme clusters within a word is fixed; word boundaries exist between morphemes and morpheme clusters with free relative order.' By defining the intermediate fused unit between morpheme and word, namely the morpheme cluster (in this case, theme), the two definitions given in Kutenai III are reconciled.

We finally deal, then, with minimum units—morphemes, and with fused units on two levels of integration: (a) morpheme clusters, polymorphemic, but constituting single units in the internal structure of the word, i.e. on the word level of integration, and (b) words, often polymorphemic, but constituting single units in the internal structure of the sentence, i.e. on the sentence level of integration. In the subsequent analysis, the levels of integration approach makes it possible to disregard the internal structure of polymorphemic fused units, since these are functionally equivalent to single morphemes in their respective frames of reference.

(This was the technique implicitly followed in Kutenai III, where both polymorphemic themes and single-morpheme themes (= stems) were symbolized X, Y, W, respectively, and treated as units functionally parallel to prefix and suffix morphemes in the internal structure of words, as witnessed by symbolizations such as xma-k-in-qsa-mu-nał-ap (11, 101, 112, X, 1181, 1174.1, 1154.4) *can you help me?*, where X represents a single morpheme, and xm-o·ła-c?inax-ała?-ne· (11, 111, 151, X, 1151.2, 1111.1) *it's time for us to go again*, where X represents a morpheme cluster.)[6]

Another consequence of this approach is that the same segment can be considered to function as units of different degrees of fusion on various levels of integration: thus, a single morpheme such as ?inco·k? *mouse* functions as a theme (morpheme cluster) on the word level of integration, which is especially clear when marginal and next-to-marginal morphemes are added to it, as in ka-?inco·k?-nała (51, Y, 1151.1) *our mouse;* it functions as a single-morpheme word on the sentence level of integration, as in ?inco·k? ɸ-n-?in-ne· (Y; 113, 121, X, 1111.1) *it was a mouse;* it may even function as a sentence on the higher level of integration of the utterance, as in ?inco·k?''[7] (Y) *a mouse!*

1. In the light of the above, Kutenai words can be placed into two groups of word classes on the basis of their internal structure: particles, which in all of their distributions within the sentence consist of a single morpheme (or morpheme cluster);[8] and full words, which in at least some of their distributions in the sentence consist of more than one morpheme (or morpheme cluster). Examples of particles are he·y *yes*, ?at *'indeed'*,[9] pał *'really'*, miksa·n *'however';* all of these remain single-morpheme in all sentence contexts.[10] Examples of full words are hu-cxał-cukat-e· (111, 131, X, 1111.2) *I'll take*, k-ɸ-yunanmaktit (101, 113, X) *many years old*, which are polymorphemic in all sentence contexts; other full words, such as qo· *that, there*, yamu *smoke* are single-morpheme in certain sentence contexts, polymorphemic in others: hu-c-c?inax-e· qo· (111, 131, X, 1111.2; W) *I'll go there*, hu-wo·kat-e· yamu (111, X, 1111.2; Y) *I saw smoke*, where they are single-morpheme; ɸ-c?inax-e· qo·-s ?ume·-s (113, X, 1111.2; W, 1132; W, 1132) *he went there*

[6] Examples reproduced from op. cit., 173.

[7] Double apostrophe at the end of a word indicates a type of emphatic intonation consisting in low tone and strong stress on the penult, high tone and lengthening on the final syllable.

[8] All particles found so far consist of a single morpheme; the parenthetic reservation is made to anticipate possible underlying analysis of some into clusters of more than one morpheme, though no such analysis has so far suggested itself.

[9] Quotation marks are used deliberately in these translations to indicate their more-than-usual makeshift nature.

[10] This statement, as well as the above definition of particles, are equivalent to the traditional statement that they are 'uninflected'.

down (*i.e., down there*), *#* -wo·kat-e· yamu-ʔs (113, X, 1111.2; Y, 1132) *he-saw smoke*, where they are polymorphemic.

Full words contain a constant component which remains unchanged in all sentence contexts in which they function; it is the component retained in those contexts where full words may be single-morpheme: this is the morpheme or morpheme cluster which, though not defined until this point, has already been designated as theme;[11] that is, full words have themes. Morphemes that are added to the constant theme in certain sentence contexts have previously been referred to as marginal and next-to-marginal morphemes,[12] to these, the term PARADIGM (or, paradigmatic prefixes and suffixes) is henceforth applied.[13] The internal structure of full words can then be symbolized by the formula: theme ± paradigm.[14] Since the type of theme determines the type of paradigm employed,[15] full words can be classified in terms of the themes they contain. Themes, in turn, are then defined in terms of the paradigm they determine.[16] In summary, it may be said that theme types, and thereon contingent full-word classes, are PARADIGMATICALLY MARKED. By contrast, particles can be grouped into classes on the basis of varying function in the sentence, that is, particle classes are SYNTACTICALLY MARKED. Finally, certain polymorphemic themes of full words contain morphemes which—with some reservations—occur only in themes of one particular type, which means, words of one particular class. It may be said, hence, that these morphemes—called class markers—[17] mark the type of theme, and class of word, in which they occur. Conversely, it may be said that type of theme and word class are INTERNALLY MARKED.

In summary, it may be said that there is a three-fold marking of word classes in Kutenai: full-word classes are paradigmatically marked, particle classes are syntactically marked, and some full words are in addition internally marked as to class.

2. Theme types have previously been designated X, Y, W, respectively;[18] we now may add the designations of the classes of full words containing themes of these types: VERBS will here be called words containing themes of type X, NOUNS—words containing themes of type Y, and ADVERBS—words containing themes of type W. Paradigms determined by themes will be discussed in terms of minimum sequences and elaborations;[19] certain limitations of the basic paradigms will necessitate the admission of theme subtypes, designated by subscript letters, within the frame of the theme types listed above: subtype X_r under type X; subtypes Y_p, Y_r, Y_n, under type Y. Parallel to this, sub-classes of full words are recognized: reflexive verbs (containing X_r) under verbs; personal nouns (Y_p), reflexive nouns (Y_r), and number nouns (Y_n), under nouns.

[11] See above, and Kutenai III, IJAL 14.171 (1948).

[12] See above, and ibid.

[13] For a more general discussion of the question of paradigms in American Indian languages, see C. F. Voegelin's forthcoming paper, Linguistically Marked Distinctions in Meaning, in press with Proc. XXXIXth Int'l Congr. of Americanists, New York, 1949.

[14] Here, as in the previous papers on Kutenai, the symbol ± is used to denote 'with or without'; thus, 'theme ± paradigm' is to be read 'theme with or without paradigm.'

[15] This is, incidentally, the type of relationship referred to as selectin in Louis Hjelmslev, Omkring Sprogteories Grundlæggelse, p. 23–4 (Copenhagen, 1943); in Hjelmslev's terminology, 'the paradigm selects the theme.'

[16] A short discussion of theme types has already appeared as section III of Kutenai III, IJAL 14.186–7 (1948); this discussion is here expanded and systematized from the present viewpoint.

[17] The term 'class marker' has previously appeared, though without further specification, in the definition of stems in Kutenai III, IJAL 14.171 (1948).

[18] See above, and Kutenai III, IJAL 14.171 and 186–7 (1948).

[19] See fn. 16.

2.1. Verb paradigms are as follows.

2.1.1. Minimum verb sequences containing themes X are 110,[20] X; X, 1113; X, 1114; X, 1121: hu-q?u?mne· (111, X) *if I slept*, ?itkin-in (X, 1113) *do it!*, pisxu?-nu (X, 1114) *put me down!*, ?e·-ke·ł (X, 1121) *eat(pl.)!*

Elaborations of these minimum sequences occur with paradigmatic prefixes 10, 120–180, and suffixes 1111, 1112, 1120–1140, 1151–6, 1160, 1171–5, 1180, 1190, in the relative order and possible combinations discussed in Kutenai III.

2.1.2. Reflexive verb themes X_r are functionally equivalent to ordinary verb themes X followed by a reflexivizer suffix, in formula: $X_r \equiv X$, 1191 OR 1192. Minimum reflexive verb sequences containing themes X_r are then 110, X_r, suffix; X_r, 1113; X_r 1121: hu-q?akpame·-k (111, X_r, 1182) *I forgot*, hu-q?akpay-ała (111, X_r, 1151.2) *if we forgot*, ?aquɬiła-m (X_r, 1113) *buy it!*, cink?apałte·-kił (X_r, 1121) *listen(pl.)!*

Elaborations of these minimum sequences occur with paradigmatic prefixes 10, 120–180, and suffixes 1111, 1112, 1120–1140, 1151–6, 1160, 1171–5, 1180, in the relative order and possible combinations discussed in Kutenai III.

(The distributional conditions for alternants of themes X_r are parallel to those of alternants of paradigmatic suffixes 1191 and 1192 in terms of ensuing morphemes. For the latter, in addition to alternants of type 1000.3, 1000.4, in terms of the preceding morphemes,[21] four types of alternants were previously distinguished in terms of the ensuing morpheme; the latter are here grouped together and designated by roman numerals I, II, III, IV respectively. Alternants of type I are -mē- for 1191.3, -ē- for 1191.4, -nilē- for 1192.3, -ilē- for 1192.4; alternants of type II are -ne·- for 1191.3 and 1192.3, -e·- for 1191.4 and 1192.4; alternants of type III are -niy- for 1191.3 and 1192.3, -iy- for 1191.4 and 1192.4; alternants of type IV are -na- for 1191.3, -a- for 1191.4, -ni- for 1192.3, -i- for 1192.4, respectively. Distributional conditions are the following: alternants of type I occur before word-final suffix 1182 and suffix 1112; alternants of type II occur before suffixes 1181, 1174; alternants of type III occur before suffixes which have alternants of type 1000.2, and suffixes 1131, 1121; alternants of type IV occur before suffix 1113 and word-medial suffix 1182. The same four types of alternants occur with many themes X_r with identical distributional conditions; for other themes X_r, alternants of types II and III coincide. Examples are: */-kłinq?uɬi-k (113, alternant I of X_r, 1182) *is playing*, */-kłinq?uy-mu-ne· (113, alternant II-III of X_r, 1181, 1111.1) *plays with it*; k-*/-?aquɬili-k (101, 113, alternant I of X_r, 1182) *buying it*, k-*/-?aquɬiliy-mał (101, 113, alternant II of X_r, 1174) *trading partner*, hin-?aquɬiy-kił-ne· (112, alternant III of X_r, 1121, 1111.1) *you (pl.) bought*, ?aquɬiła-m (alternant IV of X_r, 1113) *buy it!*

In addition, there is some phonetic similarity between final components of certain themes X_r and some of the alternants of paradigmatic suffixes 1191 and 1192; thus, compare alternants I, III, IV -?aquɬili- ~ -?aquɬiy- ~ -?aquła- *buy* to alternants I, III of 1192.4 -ili- ~ -iy-, and alternant IV of 1191.4 -a-; or alternant I of -q?akpamē- to alternant I of 1191.3 -mē-.)

2.2. Noun paradigms are as follows.

2.2.1. The minimum noun sequence containing a theme Y is Y: ?a·kułaqpe·q (Y) *herb; tea*, łukpu (Y) *cow*.

Elaborations of these minimum sequences occur with paradigmatic prefixes 41, 51, and suffixes 1121, 1130, 1151, 1152, 1157,

[20] For a listing of paradigmatic morphemes, here identified by morphological index number only, see Kutenai III, IJAL 14.171–87 (1948), passim.

[21] See Kutenai II, IJAL 14.89 (1948).

1174, 1176, in the relative order and possible combinations discussed in Kutenai III.

2.2.2. Personal nouns contain at least one paradigmatic morpheme in addition to theme Y_p; this additional morpheme may be a person marker or the reflexive comitative (suffix 1176). Minimum sequences therefore are: 51, Y_p; Y_p, 1152; Y_p, 1155; Y_p, 1157; Y_p, 1176: ka-titu (51, Y_p) *my father*, ʔa·kitła?-nam (Yp, 1152.1) *house* (lit.: *someone's house*), xałe·?-nis (Y_p, 1155.3) *your son*, ʔa·ke·-ʔis (Y_p, 1157) *his finger*, swin-tmu (Y_p, 1176) *she and her daughter*.

Elaborations of these minimum sequences occur with paradigmatic prefix 41, suffixes 1121, 1130, 1151, 1174, in the relative order and possible combinations discussed in Kutenai III.

Personal nouns include kinship terms and terms for other human relationships, body parts, and social units or their habitats (cf. ʔa·kitła?-nam *tent, house = family*, ʔa·kikłu?-nam *camp, town = campmates, tribe, band, team*), also results of personal activity and their metaphorical derivates (cf. ʔa·kma?-nam *trail = path, road*).

(There are some semantic limitations to the distribution of themes Y_p with paradigmatic prefix 41, and suffixes 1152, 1176: prefix 41 has been found with certain 'animate' nouns only, thus ʔał-ka-swu (41, 51, Y_p) *my friends*, but NOT, for instance, *ʔał-ka-titu *my fathers*, or *ʔał-ka-a·kitła *my houses* (*bands*); suffix 1152 has been found only with certain kinship terms, not with others, thus ca?-nam (Y_p, 1152.1) *friar* (lit.: *someone's younger brother*), nana?-nam *nun* (lit.: *someone's younger sister*),[22] but NOT, for instance, *su?-nam *someone's father* (*w. sp.*), or *ma?-nam *someone's mother*; prefix 1176 has been found only with certain kinship terms and terms for human relationships, thus tiłnamu?-tmu *man and wife* (lit.: *he with his wife*), but NOT, for instance, *ʔa·kikłu?-tum *he and his band*.

[22] Cf. Paul L. Garvin, Kutenai Lexical Innovations, Word 4.120 (1948).

(These distributional limitations are assumed to be semantic in the sense that, in terms of present-day Kutenai culture, sequences other than those listed above as occurrent 'would not make sense'. The evidence of ca?-nam *friar*, nana?-nam *nun*, which before acculturation set in may well have been equally 'impossible' sequences (since kinship in Kutenai can not be impersonal; the Kutenai consistently refuse to give terms for, say, *just father*, *anyone's father*). These semantic limitations are relaxed when the language is called upon to meet a new cultural situation. The assumption is therefore made that such 'non-occurrent' sequences as have been referred to above can be actualized whenever they are not 'against the culture' any more—as was the case with ca?-nam *friar* and nana?-nam *nun* after the arrival of the Catholic missionaries—and hence may be considered potentially part of Kutenai structure. Therefore no additional theme subtypes are recognized on the basis of these semantic limitations of themes Y_p.)

2.2.3. Reflexive nouns contain, in addition to the theme Y_r, the reflexivizer suffix 1191 and one or more person marker morphemes; also, since 1191 does not occur word-finally, whenever person marker suffixes are absent (though then a prefix is present) suffix 1182 is included in the sequence. Minimum sequences therefore are: 51, Y_r, suffix (1182 OR 1151); Y_r, 1191, 1152; Y_r, 1191, 1155; Y_r, 1191, 1157: ka-a·kikł-i-k (51, Y_r, 1191.4, 1182) *my name*, ka-a·kikł-iy-ała (51, Y_r, 1191.4, 1151.2) *our names*, ʔa·kmak-niy-am (Y_r, 1191.3, 1152.2) (*someone's trail, track*, ʔa·qałe·kn-iyi-nis (Y_r, 1191.4, 1155.3) *your job, yours to do*, ʔa·kmak-niyi-ʔis (Yr, 1191.3, 1157) *his trail*.

Elaborations of these minimum sequences occur with paradigmatic suffixes 1121, 1130, 1174, in the relative order and possible combinations discussed in Kutenai III.

Reflexive nouns include terms for close personal attributes and the results of bodily

activity, as can be seen in the above examples.

2.2.4. Number nouns contain theme-finally one of thematic suffix clusters -ni?n=tē-[23] ~ -nin=tiy- ~ -nin=tiyi- ~ -nin=ta- *plural*, -qan=tē- ~ -qan=tiy- ~ -qan=tiyi- ~ -qan=ta- *collective*, -ki?s=tē- ~ -kis=tiy- ~ -kis=tiyi- ~ -kis=ta- *dual*; the final affix of these clusters is functionally equivalent to the reflexivizer suffix 1191 (cf. functional equivalence $X_r \equiv X$, 1191 OR 1192 in section **2.1.2.** above), which in this case primarily means that it may not occur word-finally. This makes number noun themes Y_n partially functionally equivalent to reflexive noun themes Y_r with ensuing reflexivizer 1191, but unlike the latter, themes Y_n need not be accompanied by person markers; in the range of distributions of Y_r, however, the formula $Y_n \equiv Y_r$, 1191 applies. Hence, the minimum number noun sequence containing Y_n is Y_n, 1182: nasukin=ni?n=te·-k (Y_n, 1182) *chiefs*, wa·nmu=qan=te·-k *the Blood* (*tribe*), nicta·ɬ=ki?s=te·-k *boys* (*dual*).

Elaborations of this minimum sequence occur with paradigmatic prefix 51, and suffixes 1121, 1130, 1151, 1152, 1155, 1157, 1174, in the relative order and possible combinations discussed in Kutenai III. In these elaborations, suffix 1182 of the minimum sequence may be replaced by another suffix, as in ka-nasukinnintiy-ała (51, Y_n, 115112) *our chiefs*.

2.3. The adverb paradigm is as follows: the minimum adverb sequence containing themes W is W: na (W) *this*, qayaqawo· (W) *half*. Elaborations occur with suffix 1132: qo·-?s (W, 1132) *there*, ?a·qat?a·k-s (W, 1132) *nearby*.

[23] Double hyphens (=) are here and elsewhere used to mark morpheme boundaries within themes, by contrast with single hyphens (-) used to mark morpheme and morpheme cluster boundaries within words, but not within themes. For morphophonemic symbols, see Kutenai II, IJAL 14.88 (1948).

3. Particles have in section **1.** above been defined as single-morpheme words; it may now be added that the constituent morphemes of particles are stems.[24] They fall into two major particle classes: FREE PARTICLES, designated stems t, which by themselves may constitute sentences or utterances; and BOUND PARTICLES, designated stems v, which are always integrated into multi-word sentences. Examples of free particles are: he·y (t) *yes*; huyas (t) *on with us!*—used by itself, for instance, in answer to such questions as kułc?inaxała? *shall we go?*; ha· (t) *well well, oh yes*—used by itself or in contexts such as ha· qakłapse· ?ac?po·s *oh-yes, he-was-told-by wolverine*.

Bound particles fall into three minor classes: VERB PARTICLES, designated stems v_1; SYNTACTIC PARTICLES, designated v_2; and the CLITIC PARTICLE, designated v_3.

Verb particles precede and modify verbs in the sentence context: ?at (v_1) *'indeed'*[25] as in ?at'uqa?upxne· *'indeed' I-don't-know*, pał (v_1) *'really'* as in pał qa·kłaqa?ne· ?aqłsmaknik? *'really' there-were-there people*.

(Occasionally, another particle is found interposed between verb particle and verb, as in ?at cin sitłanamne· (v_1, v_2, verb) *there was just a house there* (lit.: *'indeed' only someone-was-house-there*), ?at c qà·kił?isiłne· (v_1, v_3, verb) *'indeed' and they-were-fed*.)

Syntactic particles introduce and modify various syntactic units such as phrases, clauses, or entire sentences. They may precede verbs, nouns, adverbs, or other particles: cin (v_2) *only, just* as in cin'unawsaqa?ne· *I just sat tight* (lit.: *just I-stayed-there*), cin wu?o· ?at n?inne· *only water 'indeed' was-there*, cin qô·[26] qapsqaq?łiłk?-umułne· k?ituq?łiłqamułis *only there there-seemed-to-be-a-line-drawn-by pencil* (lit.: *what*

[24] As per definition in Kutenai III, IJAL 14.171 (1948): "Morphemes which alone or paired with a class marker constitute themes or words are classed as stems." See also section 5.

[25] See fn. 9 above.

[26] The circumflex indicates a type of emphatic intonation consisting in falling-rising tone plus considerable lengthening of the vowel so marked.

is written with), cin ʔat kusłʔukʔi *because I was just by myself* (lit.: *only 'indeed' I-who-was-one*); saʔn (v_2) *but*, as in saʔn qacè·katawasne· *but it-didn't-look-at-us*, saʔn pał kshàkʔałmukwaʔit *but because there were lights there* (lit.: *but 'really' there-being-lights*); ʔa·ki (v_2) *also*, as in c ʔa·ki sakiłʔinne·wunmanamuʔs *and also still-is alive*, c ʔa·ki cin niʔs ʔat qałkʔułaqanwitʔkaxne·muneʔa·kamtʔis c tʔawunanas niʔs ʔa·ki ʔat saqʔanse· *and they just had their belt across the shoulder and the revolver was hanging there* (lit.: *and also only there 'indeed' they-had-across-the-shoulder-by their-belt and little-gun there also 'indeed' hung-there*).

The clitic particle v_3, c *and*, functions as a generalized connective with extremely variable distribution within the sentence, both sentence-initially, medially, and finally. It often occurs as the final word in a stress contour,[27] in which case inclusion in the preceding contour is indicated by a superscript arc (^). Its frequent use in this and other positions is by older and more sophisticated speakers considered 'poor language', and is avoided in dictated texts (i.e., style I);[28] this and other criteria indicate that it is often used as a 'hesitation form', in addition to connecting syntactic units of any order. Examples are: c'ułukine· c kawacʔniyałmił huqanakine· *I took it off and put it into my breechbelt* (lit.: *and I-took-it-off and my-breechbelt* [*obv.*] *I-put-it-there*), c niʔs kłàqahułpałnam^c taxa ktunaxa łukaqwo·m ksiłcxanam^c qake·ʔne· *and when they didn't understand each other any more, and the Kutenai language then was spoken, he said* (lit.: *and there people-not-understanding-anymore and then Kutenai when-people-talking and he-said*), nas c kuqałwiymił nas c kcxałqaqa·ps huqaʔupxamiłne· . . . . *while this is what I think should be, I don't know. . . .* (lit.: *here and I-who-think-it* [*obv.*] *here and what-will-be I-don't-know* [*obv.*]), txas kułaxam^c qànałxunapni^c[29] *then as-I-arrived-there and it-carried-me-there and.*

4. As was summarily stated in section **1.**, certain themes are internally marked by class markers. The latter are there defined as "morphemes which—with some reservations—occur only in themes of one particular type, which means words of one particular class." In this section, a detailed statement of class markers and their functions is given.

Class markers mark theme type and word class only when they occur as marginal components of themes, that is, theme-initially or theme-finally respectively, depending on the class marker. When they occur theme-medially, other factors determine theme type and word class.

[Thus, class marker 2 -nikʔ- *one of, one belonging to* theme-finally marks nouns, as in łunqu=nikʔ (Y) *one from over there*, but in theme-medial position may be included in a verb theme X, as in k-%-ʔiłqake·ka=nikʔ=in-s (101, 113, X, 1132) *which had come from afar.* k-%-łiʔni=nikʔ=inmituk (101, 113, X) *the river being beyond*, %-ya=nikʔ= qʔałkʔa·xo·ł (113, X) *when it was on both sides of the line*, %-ɬʔni=nikʔ=qʔanqme· (113, X) *when the island is beyond* (= *England*). Note that the last three examples show themes of parallel structure: X = u_1, 2, z_1 (for stems designated u_1, z_1, see **5.** below).]

Class markers, then, occur as initial or

[27] This is one of the instances not described in the discussion of stress contours in Kutenai I, IJAL 14.37–8.

[28] This is the main reason for not including contour-final c (v_3) AND and its graphic indication in Kutenai I; during the author's first field trip in 1946 recording equipment was not available and material was obtained by dictation—predominantly in style I, and style II forms (colloquial) recorded only sporadically, before informants had a chance to 'correct themselves'. In 1950, use of recording equipment and literal transcription of recordings yielded a proliferation of style II forms, including a multitude of instances of contour-final c (v_3) *and*.

[29] The form without contour-final v_3 is qànałxunapne·; instances of long final vowel qànałxunapne·^c were also recorded. It may therefore be said that before contour-final v_3, long vowel is replaced by long vowel in style I, short vowel in style II; that is, V· > $\bar{V}$. Cf. Kutenai II, IJAL 14.88 (1948).

final components of themes Y and W, that is, in nouns and adverbs. They are designated by single-digit morphological index numbers 1–5; their class number is 0.[30] Class markers 1–4 occur with themes of one type only (Y or W), and are here called UNIVALENT; class marker 5 occurs with themes of two types (Y in some cases, W in others), and is here called AMBIVALENT.

4.1. Univalent class markers are:

CLASS MARKER 1: (-ʔāk= ~ -āk=) ~ (-ʔāki= ~ -āki=) ~ (-ʔāku= ~ -āku=) ~ (-ʔā= ~ -ā=) NOUN MARKER.[31]

This class marker occurs as initial member of themes Y, followed, in most cases analyzed so far, by a stem z_1 (see section **5.3.1.** below) and/or other thematic morphemes:[32] ʔa·ki=tła?-nam (1, z_1, 1152.1) *house*, ʔa·ki=k=ł-iy-am (1, thematic morphemes, 1191.4, 1152.2) *name*. ʔ-initial alternants occur in contour-initial positions[33] and word-medially after vowel if class marker 1 is stressed: ʔa·k=nuxu?no·k (1, z_1) *creek*, ka-ʔa·k=e· (51, 1, z_1) *my hand*. ā-initial alternants occur in other distributions: ni-s aki=kłu-nam-is (W, 1132; 1, z_1, 1152.1, 1132) *the town* (*obv.*), ka-ak=puk?am-nała (51, 1, unanalyzed, 1151.1) *our forefathers*. Alternants -ʔā= and -ā= occur before k and q followed by vowel: ʔa·=kak?o· (1, z_1) *snare*, ʔa·=qałt-?is (1, z_1, 1157) *his child*. Alternants -ʔāku-, -āku= occur before q-initial clusters: ʔa·ku=qwat (1, z_1) *ear*, ʔa·ku=q?yu=łi?it (1, thematic morphemes) *mountain*. Alternants -ʔāki=, -āki= occur before other consonant clusters: ʔa·ki=nq?uko· (1, z_1) *fire*, ʔa·ki-kpuk? (1, z_1) *backside*. Alternant -ʔāk=, -āk= occur in other distributions: ʔa·k=łiknam (1, z_1, 1152.1) *foot*, ʔa·k=nuxu?nuk (1, z_1) *creek*.

CLASS MARKER 2: -nik? *one of, one belonging to* (*noun marker*). This class marker occurs as final member of themes Y (for other distributions, see section **4.** above), preceded, in most cases analyzed so far, by thematic morphemes or a stem u_2 (for stems u_2, see section **5.5.2.**): ʔuqu=nik?-e·s (thematic prefix, 2, 1157) *his insides*, pik?ak=nik? (u_2, 2) *the people of old*.

(The unique morpheme cluster -ʔaqłsmaknik?- may be mentioned here, which occurs as a theme Y meaning *person*, and as a theme X or part of theme X *to live*, as in ka-aqłsmaknik?-nała (51, Y, 1151.1) *our people*, k-u-c-qakił=ʔaqłsmaknik?^c[34] (101, 111, 131, thematic prefix, unanalyzed; v_3) *as-I-continued-to-live-on and*. This morpheme cluster could be analyzed into a sequence 1, unanalyzed residue, 2 and then yield a unique distribution for word-initial class marker 1 and word-final class marker 2 as parts of themes X. A further difficulty would be encountered in instances such as ʔa·kł?aqł-smaknik?-nis-mił (Y, 1155.3, 1131) *your way of life*, where the most efficient analysis of the theme ʔa·=kł=ʔaqłsmaknik?- would be 1, thematic affix =kł=[35] (marking plural, found also in examples such as ʔa·=kił=q?ałaxwi?it *doors* = *street*), unanalyzed residue -ʔaqł-smaknik?-; further analysis of the latter as suggested above would yield two class markers 1 in the same total sequence, that is, for ʔa·=kł=ʔa= qłsmak=nik?-nis-mił: 1, thematic prefix, 1, unanalyzed residue, 2, 1155.3, 1131. Instead, we propose to leave the sequence -ʔqłsmaknik?- unanalyzed and propose that while an underlying analysis into 1, unanalyzed residue, 2, is suggestive from a historical standpoint, synchronically this sequence functions as

[30] Cf. class designations 00, 100, 1100, and 110, 120, etc., in Kutenai III, IJAL 14.171 and passim.

[31] This morpheme is singled out by Franz Boas in the entry 'a_a'*k*- prefix of noun' in the glossary of his Kutenai Tales, BAE-B 59.314–23 (Washington, 1918).

For morphophonemic symbol ā, see Kutenai II, IJAL 14.88.

[32] Morphemes, prefixes, suffixes, are called 'thematic' when they form part of themes. They are not further defined in this paper, but will be discussed in detail in Kutenai V: Internal Structure of Themes.

[33] Cf. Kutenai I, IJAL 14.37–8 (1948).

[34] See fn. 26.

[35] For morphophonemic symbol ɪ, see Kutenai II, loc. cit.

an unanalyzable stem y_x [for treatment of stems y_x, see section **5.2.2** below].)

CLASS MARKER 3: =na- *doer (noun marker)*. This class marker occurs as final member of themes Y preceded, in cases analyzed so far, by a stem z_2 (see section **5.2.2.** below): ka-ʔiɬwat?=na (51, z_2, 3) *my servant.*

CLASS MARKER 4: =ha·k-[36] ADVERB MARKER. This class marker occurs as final member of themes W after one or more thematic prefixes: ʔa·qat?=a·k *nearby*, ʔiɬ=qa=ha·k *far away*, caqa=ha·k-s (thematic prefix, 4, 1132) *up the creek.*

4.2. The ambivalent class marker is:

CLASS MARKER 5: =namu- NOUN AND ADVERB MARKER. This class marker occurs as final member of some themes Y and some themes W, preceded, in most cases analyzed so far, by a stem y or x or a special stem x_s or x_n (see section **5.**) and/or other thematic morphemes: ka-a·knik?=namu (51, [Y = y,[37] 5]) *my relative*, ʔaqsuq?it=namu-?s ([Y = unanalyzed, 5], 1132) *summertime*, suk=nikit=namu (Y = x_s, thematic suffix, 5) *something good*, ʔup=namu (W = x, 5) *dead*, ʔuk?=namu (W = x_n, 5) *the same.*

It appears that class marker 5 marks themes Y after stems Y, and themes W after stems x and x_n, but examples found thus far do not allow us to make a general statement to that effect.

5. Stems are in Kutenai III defined as 'morphemes which alone or paired with a class marker consitute themes or words.'[38] We therefore here include a treatment of stems to the extent to which they have bearing on theme typing and word classification.

In the treatment of particle classes in section **3.** stems which constitute words, i.e. particles, of types t, v, and of sub-types v_1, v_2, v_3, have already been singled out and defined. Here we discuss those stems which may constitute themes of full words; many of these may, in addition, have other distributions as parts of themes. They are of the basic types x, y, z, w, u; in addition, certain of the stems of the types mentioned above have distributional peculiarities on the basis of which the following subtypes are recognized: subtypes x_r, x_s, x_n, under stems x, sub-types y_c, y_x, under stems y, defined by a more restricted (x_r) or wider (x_s, x_n, y_c, y_x) range of distribution; subtypes z_1, z_2 and u_1, u_2 composing types z and u.

5.1. Stems x may constitute themes X: hu-n-ʔik-ne· (111, 121, x, 1111.1) *I ate*, hu-siɬ-q?umne·?-ne· (111, 141, x, 1111.1) *I am sleeping.*

In addition, stems x may form part of polymorphemic themes X, preceded and/or followed by other thematic morphemes: hu-n-uɬ=ʔik-ne· (111, 121, thematic prefix, x, 1111.1) *I finished eating*, k-*-qa=taɬ=q?u?mne· (101, 113, thematic prefixes, x) *unable to sleep*, hu-sukiɬ=ʔupx-ne· (111, x_s, x, 1111.1) *I know well*, k-*-suyap=aqwiɬ-nam (101, 113, y_c, x, 1152.1) *white man's dance*, *-q?apiɬ=ʔin-ne· (113, u_1, x, 1111.1) *is all of it*, k-*-ʔe·=quɬ=nawe· (101, 113, x, thematic suffixes) *heavy drinker*, *-lu=saq?=qa-ɬ-ne· (113, x, z, thematic suffix, 1141, 1111.1) *he had his leg cut off.*

A few stems x followed by class marker 5 constitute themes W: ʔup=namu (x, 5) *dead.* Only one instance of this distribution has been recorded so far.

5.1.1. Special stems x_r may constitute themes X_r: *-kɬinq?yɬi-k (113, x_r, 1182) *he is playing*, hu-n-?aquɬiɬ,-k (111, 121, x_r, 1182) *I buy.*

In addition, special stems x_r may occur as final components of themes X_r, preceded by other thematic morphemes, and as non-final components of ordinary themes

[36] For morphophonemic symbol H, see ibid.

[37] As in the case of -ʔaqɬsmaknik?- above, and underlying analysis of -ʔa·knik?- ~ -a·knik?- into 1, 2, could be attempted, but is here considered synchronically unproductive, though historically perhaps suggestive.

[38] IJAL 14.171 (1948).

X, followed and sometimes also preceded by other thematic morphemes: *#*-skikił=klinq?uy-am-ne· (thematic prefix[es], x_r, 1152.2, 1111.1) *people were playing there*, *#*-n-?up=sła·tił=cisti-k (113, 121, thematic prefixes, x_r, 1182) *urinates all the time; #*-cistiy=awe· (113, x_r, thematic suffix) *Passes-Too-Much-Water* (*proper name*).

5.1.2. Special stems x_n are limited in number. Semantically, they constitute simple numerals. Compound numerals contain a stem cluster x_n+, formed by means of affixes of class 700 added to one or more stems x_n, as outlined further below. Stem clusters x_n+ are functionally equivalent to stems x_n, as regards their distribution within themes and words.

Stems x_n are:

A: Ia -?uk?i?- ~ Ib -?uk?- ~ Ic -ʜuk?- ~ -ʜuk?i- ~ II -?o·k?un- ~ III -?uk?ił- *one*

B: I -?as- ~ II -?ay- ~ III -?asił- *two*

C: I -qałsa- ~ II -qałsan- ~ III -qałsał- *three*

D: I -xa·ca-[39] ~ II -xa·can- ~ III -xa·cał- *four*

E: I -ye·ku:-[40] ~ II -ye·ko·n- ~ III -ye·ko·ł- *five*

F: I -?inmisa- ~ II -?inmisan- ~ III -?inmisał- *six*

G: I -wist?ała? ~ II -wist?ała?n- ~ III -wist?ałał- *seven*

H: I -wuxa·ca- ~ II -wuxa·can- ~ III -wuxa·cał-[39] *eight*

I: I -qayk?it?wu- ~ II -qayk?it?wun- ~ III -qayk?it?wuł-[39] *nine*

J: I -?aqsa- ~ II -?aqsan- ~ III -?aqsał-[39] *how many*

K: I -qsa- ~ II -qsan- ~ III -qsał- *so many*

L: I -?it?wu- ~ II -?it?wun- ~ III -?it?wuł- ~ IV -?it?wum-[39] *ten*

Affixes of class 700 are:

701: -wu:-[40] ~ -wun- ~ -wum- *decade indicator*

702: -ła- *numeral linker*

5.1.2.1. Stem clusters x_n+ are formed as follows:

(1) x_n+_1 equals x_n, 701, ±(702, x_n). This formula applies to x_n *B-J*, *L* for the first position, x_n *A-J* in the second position, and yields numerals 20–109 (including 'umpty'). Alternants II of x_n occur before affix 701; alternant -wu:- of affix 701 is used in theme-final, alternant -wum- before 702; alternants I of x_n are used in theme-final positions. (Stem clusters x_n+ as parts of larger themes will be discussed in section **5.1.2.2.** below): Examples are: *#*-?ay-wo· (113, x_n *B*, 701) *twenty*, *#*-?ay=wum=ła=ye·ko· (113, x_n *B*, 701, 702, x_n *E*) *twenty-five*, *#*-qałsan=wu (113, x_n *C*, 701), *#*-xa·càn=wum=ła=?aqsa (113, x_n *D*, 701, 702, x_n *J*) *forty some-odd*, *#*-n-?aqsan-wu (113, 121, x_n *J*, 701) *'umpty'*.

(2) x_n *L* can be followed directly by affix 702 and alternants III of x_n *A-J*, according to the formula: $x_n+_2 = x_n$ *L*, 702, x_n *A-J*; yielding numerals 11–19 (including 'umpteen'): *#*-?it?wum-ła-?as (113, x_n *L*, 702, x_n *B*) *twelve*, k-*#*-?it?wum-ła-?aqsa (101, 113, x_n *L*, 702, x_n *J*) *'umpteen'*.

(3) When the initial x_n in the formula given under (1) is *L*, then the final x_n may be replaced by a cluster x_n+_1 or x_n+_2. These types then follow the formula $x_n+_3 = x_n$ *L*, 701, 702, x_n+_1 or x_n+_2; they yield numerals 111–119: k-*#*-?it?wun=wùm=ła=?ày=wum=ła=ye·ko· (113, x_n *L*, 701, 702,

[39] As in the instances referred to in fn. 37, x_n *H*, *I* -wuca·ca-, etc., and -qayk?it?wu-, etc., suggest themselves to an underlying analysis into -wu=xa·ca-, etc., and -qayk=?it?wu-, etc., respectively, with the first components -wu- and -qayk- unidentifiable, and the second components identical with x_n *D*, *L* -xa·ca-, etc., -?it?wu-, etc. x_n *L*, finally, could be analyzed into unidentifiable -?it?- followed by affix 701.

Likewise, x_n *J* -?aqsa-, etc., could be analyzed into paradigmatic prefix 181 -?a·- followed by x_n *K*.

These analyses are again considered synchronically unproductive, though historically (and perhaps semantically) suggestive.

[40] For morphophonemic symbol u:, and other symbols used in this morpheme list, see Kutenai II, loc. cit.

x_n *B*, 701, 702, x_n *E*) *one-hundred twenty-five*, k-∗-ʔit²wun=wum=ła=ʔit²wum=ła=qayk²it²wu (101, 113, x_n *L*, 701, 702, x_n *L*, 702, x_n *I*) *one-hundred nineteen*.

(4) $x_n+_4 = x_n, x_n$, 701. This formula applies to x_n *A-J* in the first position, x_n *L* in the second position, yielding multiples of 100. Alternants III are used for x_n in the first position, alternant II is used for x_n *L* in the second position: ∗-ʔasł=ʔit²wun=wu (113, x_n *B*, x_n *L*) *two hundred*.

(5) In the formulae for x_n+_1, x_n+_3, given under (1) and (3) respectively, x_n in the first position may be replaced by x_n *B-J*, followed by x_n *L*, with alternant distribution as stated under (4) above, according to the formula: $x_n+_5 = x_n$ *B-J*, x_n *L*, 701, ±(702, x_n or x_n+_1 or x_n+_2;) yielding numerals 201–999: ∗-ʔ-inmisał=ʔit²wùn=wum=ła=ʔas (113, x_n *F*, x_n *L*, 701, 702, x_n *B*) *six-hundred two*, k-∗-ʔàsł=ʔit²wun=wùm=ła=ʔit²wùm=ła=qałsa (101, 113, x_n *B*, x_n *L*, 701, 702, x_n *L*, 702, x_n *C*) *two-hundred fifteen*, k-∗-qàłsał=ʔit²wùn=wum=ła=ʔay=wo· (101, 113, x_n *C*, x_n *L*, 701, 702, x_n *B*, 701) *three-hundred twenty*, ∗-yè·ko·l=ʔit²wun=wùm=ła=qałsàn=wum=ła=ʔaqsa (113, x_n *E*, x_n *L*, 701, 702, x_n *C*, 701, 702, x_n *J*) *five-hundred thirty-some-odd*.

5.1.2.2. Stems x_n and stem clusters x_n+ have a set of distributions identical with those of basic stems x, in which alternants Ia, I of stems x_n (alone or as final components of x_n+) are used: k-∗-ʔuk²e· (101, 113, x_n *A*) *being one*, k-∗-qò·qał=wist²ała (101, 113, thematic prefix, x_n *G*) *about seven*, m-o·-qsa-nała²-ne· (12, 111, x_n *K*, 1151.1, 1111.1) *a number of us were together*, hu-n-²as=qałt-e· (111, 121, x_n *B*, z_1, 1111.2) *I had two children*, k-∗-qo·qał=ʔit²wum=ła=ye·ko·-s (101, 113, thematic prefix, x_n *L*, 702, x_n *E*, 1132) *about fifteen* (*obv.*), ∗-ʔasł=ʔit²wun=wu-ne· (113, x_n *B*, x_n *L*, 701, 1111.1) *it is two hundred*. Cf. also examples given in the preceding section.

5.1.2.3. In additon to the above, stems x_n and stem clusters x_n+ have a number of other distributions.

(1) Stems x_n and stem clusters x_n+ are found as non-central constituents of themes X before and sometimes also after other thematic morphemes. In these distributions, alternants I, II, III of x_n (alone or as final components of x_n+) are used, depending on the following morpheme. Details are reserved for Kutenai V; here, only some examples are given: hu-qałsał=qan=łał=t-e· (111, x_n *C*, thematic morphemes, 1111.2) *I struck three of them;* k-∗-qo·qał=ʔo·kun=makut (101, 113, thematic prefix, x_n *A*, thematic morpheme) *about one year*, k-∗-ʔay=wun=mitit (101, 113, x_n *B*, 701, thematic morpheme[s]) *taking 20 days*, k-∗-ʔuk²ił-wił-qa (101, 113, x_n *A*, thematic morphemes) *the biggest, oldest, tallest*, ∗-cxał-qsàł=wala=qa²-ne· (113, 131, x_n *K*, thematic morphemes, 1111.1) *there will be a few people here*.

Stem x_n *A* also occurs as member of a number of thematic morpheme clusters, in which alternants Ib, Ic are used, such as -ʔuk²=qaw= *same place*, -huk²=nił= ∼ -huk²i-nł= *suddenly*: hu-ła-²ùk²=qaw=x=am (111, 151, thematic cluster containing x_n *A*, thematic morphemes) *when I went back to the same place*, hu-n-ùk²=nił=c²=in=ax-e· (111, 121, thematic cluster containing x_n *A*, thematic morphemes, 1111.2) *I started out right away*. Thematic morpheme clusters will be defined, and details of these and other clusters discussed, in Kutenai V.

(2) Stems x_n and stem clusters x_n+ form thematic morpheme clusters in which they are followed by multiplicative affix =q²ał= ∼ =q²ałił= *'times'*; these clusters could, in traditional terminology, best be called 'incorporated multiplicative numerals'. Alternants Ib, I of x_n (alone or as final components of x_n+) are used: -²uk²=q²al= ∼ -²uk²=q²ałił- *once*, -²as=q²al= ∼ -²as=q²ałił= *twice*, etc. Alternants of the multiplicative affix depend on the ensuing morpheme: hu-n-²uk²=q²ał=mit=xa=łtit-ne· (111, 121, x_n

A, multiplicative affix, thematic morphemes, 1111.1) *I fired one shot*, hu-ye·ko·=q?ałił=qana=quł-nała?ne· (111, x_n *E*, multiplicative affix, thematic morphemes, 1151.1, 1111.1) *we put water in five times*, ɸ-qałsa=q?ałił=wana=qna-mi-k (113, x_n *C*, multiplicative affix, thematic morphemes, 1191.3, 1182) *he fought three times*, hu-qsa=q?ałił=qana=quł-nała?-ne· (111, x_n *K*, multiplicative morpheme, thematic morphemes, 1151.1, 1111.1) *we put water in so many times*.

(In regard to the cases discussed under (1) and (2) above, it is interesting to note that uses of complex stem clusters x_n+ are often avoided within larger themes X; instead, a syntactic construction consisting of a verb containing stem cluster x_n+ alone as theme, followed by another verb containing a larger theme X which in turn contains x_n *K*, is found: k-ɸ-?ay=wun=mitit (101, 113, x_n *B*, 701, thematic morpheme[s]) *taking 20 days*, but—ɸ-wuxa·càn=wum=ła=qałsa hu-sł-qsan=maktit-ne· (113, x_n *H*, 701, 702, x_n *C*; 111, 141, x_n *K*, thematic morpheme[s]) *I am 83 years old* [lit.: *if-it-is-83 I-am-so-many-years-old*].)

(3) Alternant Ib of x_n *A* followed by class marker 5 constitutes a theme W: ?uk?=namu (x_n *A*, 5) *the same*. (Cf. section **4.2.** above)

5.1.3. Special stems x_a have a set of distributions identical with those of basic stems x: ɸ-su?k-ne· (113, x_a, 1111.1) *it is good*, ɸ-?isił=cmak?ił=sahan-ne· 113, thematic prefixes, x_a, 1111.1) *it is really very bad*, hu-sa·n=iłwiy-ne· (111, x_a, z_1, 1111.1) *I became angry*.

In addition, stems x_a have a set of distributions identical with those of x_n discussed in section **5.1.2.2.**, under (1), above: hu-sukił=?o·-ne· (111, x_a, x, 1111.1) *I know it well*, hu-camnał=?aqc=xu?-ne· (111, x_a, thematic morphemes, 1111.1) *I smashed few of them*.

In some cases, stems x_a occur as initial components of themes Y marked by class marker 5: suk=nikit=namu (x_a, thematic morpheme, 5) *something good*.

Stems x_a can most often be rendered by English adjectives. Alternant distributions and other details are reserved for Kutenai V.

5.2. Stems y may constitute themes Y: ?inco·k? (y) *mouse*, ka-pałke·-nała (51, y, 1151.1) *our woman*, ?ała-?is (y, 1157) *her girl friend*.

Stems y may also, together with the diminutive suffix -nana- (morphological index number to be assigned in Kutenai V), form polymorphemic themes Y: ?acu=nana (y, diminutive suffix) *cup* (lit.: *little pot*), ktunaxa=nana (y, diminutive suffix) *little Kutenai fellow*.

Finally, stems y may constitute the initial components of themes Y_n (see section **2.2.4.** above), in which they may be followed by the diminutive suffix -nana- mentioned above: qapsin=ni?n=te·-k (y, thematic suffix cluster, 1182) *things*, nicta·ł=nana=ki?s=te·-k (y, diminutive suffix, thematic suffix cluster, 1182) *little boys* (*dual*).

5.2.1. Special stems y_c have a set of distributions identical with those of basic stems y: ka-suyape·-mał (51, y_c, 1174) *I and another white man*, suyap=nana (y_c, diminutive suffix) *little white fellow*, suyapi=ki?s=te·-k (y_c, thematic suffix cluster, 1182) *white men* (*dual*).

In addition, stems y_c occur as members of themes X before stems x; stems y_c and x in succession may here be considered a compound (hence subscript $_c$ in the designation y_c): ?at'u-suyap=aqwił-mał-ne· (v_1; 111, y_c, x, 1174, 1111.1) *I danced white man's dance with him*.

Only one example of stem y_c has been recorded so far.

5.2.2. Special stems y_x have a set of distributions identical with those of basic

stems y: ka-ʔaqɬsmaknikʔ-nała (51, y_x, 1151.1) *our people.*

In addition, stems y_x may also constitute, or form part of, themes X: ku-c-qakiɬ-aqɬsmaknikʔ[41] (101, 111, 131, thematic prefix, y_x) *as I continued to live on.*

Finally, stems y_x are found as parts of themes Y after class marker 1 and thematic affix: ʔa·-kɬ-ʔaqɬsmaknikʔ-nis-miɬ (1, thematic affix, y_x, 1155.3, 1131) *your way of life.*

Only one example of stem y_x has been recorded so far.[42]

5.3. Stems z together with a class marker constitute themes Y; they also occur as parts of themes X.

5.3.1. Stems z_1 follow class marker 1 in themes Y: ʔa·ki-tła?-nam (1, z_1, 1152.1) *house, tent; family,* ʔaɬ-ka-ʔa·-qałt (41, 51, 1, z_1) *my children.*

As part of themes X, stems z_1 follow stems x, including x_n and x_a, and various other thematic morphemes; they may precede various thematic morphemes. In many cases, they constitute what in traditional terminology would be called 'incorporated objects': ɸ-ɬu-łam-a?-ne· (113, x, z_1, thematic suffix, 1111.1) *he beheaded him,* ɸ-qa·kiɬ-paqʔmiɬ-umi-mu-nawas-ne· (113, 132, x_a, z_1, 1181, 1153.3, 1111.1) *we had a flat tire* (lit.: *it was bursting the air for us*), hu-n-ʔinmisa-qałt-e· (111, 121, x_n *F*, z_1, 1111.2) *I have six children,* ɸ-yi-swa·ka-qʔnuk-s-ke· (113, 162, thematic prefix[es], z_1, 1132, 1112) *the near end of the lake,* ɸ-qaɬ-quna-nu-xun-*łam*-an-yax-ne· (113, thematic morphemes, z_1, thematic suffixes) *he knocked it over with his head,* ɸ-qa·-cʔła?n-xuʔ-me·-k (113, thematic prefix, z_1, thematic suffix, 1191.3, 1182) *there was a tree lying there.*

[41] See fn. 26.

[42] For another possible interpretation (rejected in this paper) of this segment, see section **4.1.** (parenthetic paragraph) above. Cf. also fn. 37, 39.

5.3.2. Stems z_2 precede class marker 3 in themes Y: ka-ʔiɬwatʔ-na (51, z_2, 3) *my servant.*

As part of themes X, stems z_2 were found before thematic suffixes: hu-n-ʔiɬwatʔ-t-iɬ-ne· (111, 121, z_2, thematic suffix, 1141, 1111.1) *I was ordered to.*

Only one example of stem z_2 has been recorded so far.

5.4. Stems w constitute themes W: na-ʔs (w, 1132) *here,* ni-ʔs (w, 1132) *the* (*obv.*)

5.5. Stems u may constitute themes W; they may also occur as parts of themes X or Y.

5.5.1. Stems u_1 may constitute themes W: qʔape·-s (u_1, 1132) *all* (*obv.*)

Stems u_1 are also found as parts of themes X before stems and other thematic morphemes, usually with different alternants from those used as themes W: hu-qʔapiɬ-ʔupx-ne· (111, u_1, x, 1111.1) *I know all,* hu-qʔapiɬ-ʔiktik-mit-e· (111, u_1, thematic morphemes, 1111.2) *I throw all of them up in the air.*

5.5.2. Stems u_2 may constitute themes W: pikʔak-s (u_2, 1132) *already; formerly.*

Stems u_2, together with following class marker 2, constitute themes Y: pikʔak-nikʔ (u_2, 2) *people of old.*

Only one example of stem u_2 has been recorded so far.

6. In the preceding sections, Kutenai word classes were singled out, defined, and analyzed. We here summarize them in tabular form:

Full words (**2.**)
- verbs (**2.1.1.**)
  - reflexive verbs (**2.1.2.**)
- nouns (**2.2.1.**)
  - personal nouns (**2.2.2.**)
  - reflexive nouns (**2.2.3.**)

number nouns (**2.2.4.**)
adverbs (**2.3.**)
Particles (**3.**)
free particles
bound particles
verb particles
syntactic particles
clitic particle.

Class markers (**4.**) and stems (**5.**) have been included because of the part they play in determining the class of words in which they are contained, and their treatment was limited to consideration from this standpoint.

CONTRASTIVE FIELD EXPERIENCE WITH LANGUAGE AND VALUES OF THE ARAPAHO[1]

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The problem of the relationship of language to culture both with regard to the status of the former with reference to the latter, and the impact of the latter upon the former has recently been widely discussed.[2] Gross's paper (see fn. 1) is a contribution to the second-mentioned aspect of the relationship. Though the impact of acculturation upon the Arapaho language is Gross's primary concern, he gratuitously assigns a general validity to his sociological hypothesis. The present writer whose linguistic training includes field work with the Arapaho, proposes to discuss those points of the study on which he disagrees with Gross, who is a sociologist rather than a linguist.[3]

Gross's chief points are two: (1) Arapaho is given to borrowing rather than innovating. While acquiring cultural innovations from the Occidental culture, particularly technological ones, Arapaho has shown no inclination to create a new technological terminology of native provenience. Instead, it has adopted parts of the language of the dominant culture, i.e., English.

(2) Arapaho yields gradually to English, becoming, in the process of deterioration, in effect a mixed language. Arapaho differs from generation to generation, quantitatively and qualitatively. Each generation is said to have a somewhat different language, or to use a different blend of English and Arapaho. While the knowledge of English is increasing, that of Arapaho is diminishing (Gross's scale of deterioration: perfect—very good—good). Thus, for the generation from twenty to forty years of age, English is becoming the dominant language of the family.

Gross's point (1) appears, from a linguistic point of view, to be incorrect. The Arapaho do have new native expressions to cover accultured items and situations. Of Gross's eight examples of native lexical deficiency, I find six Arapaho equivalents in my file: [téy?ɑni·hí·tɔnɔ] *clutch, cogs;*

[1] I contrast my own experiences with those reported by Gross. Cf. Feliks Gross, Language and Value Changes Among the Arapaho, IJAL 17.10–17 (1951).

[2] See, for instance, Harry Hoijer, Linguistic and Cultural Change, Lg. 24.335–345 (1948); Charles C. Fries and Kenneth L. Pike, Coexistent Phonemic Systems, Lg. 25.29–50 (1949); C. F. Voegelin and Z. S. Harris, The Scope of Linguistics, AA 49.588–600 (1947); Voegelin and Harris, Linguistics in Ethnology, SJA 1.455–465 (1945); Voegelin, Linguistics Without Meaning and Culture Without Words, Word 5.36–45 (1949); Charles F. Hockett, Language "and" Culture: A Protest, AA 52.113 (1950); Voegelin, A "Testing Frame" for Language and Culture, AA 52.432–435 (1950); George Herzog, Culture Change and Language: Shifts in the Pima Vocabulary, *in* Language, Culture, and Personality, Essays in Memory of Edward Sapir (Menasha, Wis., 1941), pp. 66–74; William L. Wonderly, Phonemic Acculturation in Zoque, IJAL 12.92–95 (1946); Paul L. Garvin, Distinctive Features in Zoque Phonemic Acculturation, SIL 5.13–20 (1947); Garvin, Kutenai Lexical Innovations, Word 4.120–126 (1948); D. L. Olmstead, Ethno-linguistics so far, SIL Occasional Paper's No. 2 (1950).

[3] My data on Arapaho were obtained during summer field trips to the Wind River Reservation in 1949 and 1950 under grants from the American Philosophical Society and the Graduate School of Indiana University; a descriptive grammar of Arapaho is being prepared as a doctoral dissertation under the direction of C. F. Voegelin, to whom I am also indebted for guidance in writing this paper.

For some valuable sociological observations on the Arapaho, cf. Feliks Gross, Nomadism of the Arapaho Indians of Wyoming and Conflict between Economics and Idea System, Ethnos 14.65–88 (1949).

[čéhɛ·kú·tənə] *spark plugs*; [ni·ní·hɛn čébɪ·kó·hu· bí·nɔθé·nət·i·] *truck*; [čɛ·bísɛ·nɔ·ʔɔ] *tractor*; [čéyʊθɪwɔ́ɔnɔʔ] *radio*; [tɔyɔ́·wʊsέθɔɔ] *refrigerator*; for Gross's chee-ree-tta (sic!), the correct form is [čɛbɪ́t·ɛ·] *gasoline*.[4] Similarly, there are Arapaho equivalents for *tire*, *steering wheel*, *brake*, *train*, *telephone*, *telegraph*, *long-distance call*, *highway*, *electricity*, etc. The fact that Gross heard Arapaho ordering Holly sugar in English is for him another proof of the deficiency of the Arapaho lexicon. There is, of course, Arapaho [ni·sísčɔ·] *sugar*; does Gross, then, expect a native equivalent for *Holly*, or perhaps the hybrid Holly [ni·sísčɔ·]? Coca-Cola and other effervescent beverages, excluding root beer and beer, are classified in Arapaho as [nɪsčíxʔɛbi·t] *sweet drink*, but there are no native equivalents for the different trade names. The Arapaho have a generic term for both Coca-Cola and Pepsi-Cola; does Gross mean to suggest that these Indians should be culturally interested in the difference of trade names? Their native resources will get them a bottle of "pop," but, to be sure, without distinction among rival brands.

Like Kutenai,[5] Arapaho has resolved its acculturation with minimum loans and loan translations. Obvious loans from English that I can detect in my notes, like [čé·bɪní·] *Germany*, *Germans*, are conspicuous by their rarity.

The bulk of native equivalents for acculturated items and situations are explanatory innovations, or as Garvin terms it, extensions of the range of meaning or metaphorical usages. Thus, for *radio*, Arapaho has an explanatory term, [čéyʊθɪwɔ́ɔnɔʔ] *spirits that one can hear but not see*; for *steering wheel*, the Arapaho explanation is [nɔ́·ʔɛyíyɔɔ] *harness line;* what we call *rice* Arapaho calls [hɪʔíisɔ·nɔʔ] *maggots*; what we call *train* Arapaho calls [hésɔʔ-ɔ·nɔ́t·i·] *fast wagon*; what we call *elephant* Arapaho calls [hɔnɔ́·kɔwú·bɛ·t] *it has a bent nose*; what we call *box* Arapaho calls [čɛʔɛyíbɛs] *hollow wood*; etc.

Though Gross may not have heard them, there are Arapaho words for clothing, seasons of the year, days of the week, and at least nine months of the year. It is true, however, that some Arapaho use the corresponding English word instead of the Arapaho term. Some use only the Arapaho word, while some mix the two. High numerals, though existent, are avoided. This is due mainly to the lack of separate isolated morphemes for high numbers in the Arapaho frame pattern, which produces a congestion of operative morphemes on high levels.[6]

It has been perhaps sufficiently shown that Arapaho is much more resourceful than Gross has stated in his paper. Yet we have to add that even the admission of non-native lexical items into a given lexical body would not necessarily imply the deterioration shown in Gross's aforementioned scale: if it did, English—as we speak it today—would obviously appear second-rate with possible chances of extinction.

This brings us to point (2) and a question which we would like Gross to answer: what criteria did he set up to determine the degree of deterioration? His table of the generational distribution implies quite clearly two separate norms, one for English, the other for Arapaho. It is obvious that for the evaluation of Arapaho Gross must have relied upon the pronouncements of native speakers, quite probably a few respected old-timers. And this is where the present writer would again disagree. In the last fifty or sixty years the Arapaho unquestionably have felt more vigorous acculturation than at any previous time in their existence.

Their linguistic norm (of which the Ara-

[4] This should not be considered as negative evidence for the remaining two terms *carburetor* and *gears*.

[5] Cf. Garvin, op. cit., Word 4.120–126 (1948).

[6] For terminology, see my paper A Method for Analyzing Numerical Systems, Word 6.78–83 (1950).

paho are not aware, but which may be established by the investigator) must have changed at a rapid pace in recent acculturation. The present writer made several inquiries concerning this matter in the field. "The youngsters," asserts an old Indian, "speak a funny Arapaho; they don't use all the big words that we do and that our fathers did, and they take many short cuts. We can understand them all right, but it doesn't sound the way we would say it."[7] From the point of view of a scientist, such and similar statements are meaningless; what they illustrate is that a serious linguistic situation needs to be investigated.

Though Arapaho may, as Gross suggests, cease to be spoken in the course of time, we do not have any reliable details of what happens before a language becomes extinct; Gross's assertions are contrary to the facts which I observed in the field. I do not extend my criticism to statements beyond the specific considerations of the Arapaho language. I certainly cannot comprehend the parallelism—which Gross urges—of the Arapaho to Polish immigrant children.

In the following, I would like to submit some supplementary information bearing on the previous discussion.[8]

To my knowledge, two schools with transportation facilities are currently available exclusively for the Arapaho children on the Wind River Reservation: the St. Michael's Mission school (Episcopal) at Ethete and the St. Stephen's Mission school (Roman Catholic) at St. Stephens, some twenty miles east of Ethete. The language of instruction is English and the teachers are whites. However, when unsupervised, pupils on the St. Michael's Mission grounds were heard talking mostly in Arapaho.

My chief informant, John Goggles of Ethete, uses Arapaho exclusively with the members of his family. When spoken to in English by his children, he invariably answers in Arapaho. Only occasionally would he use an English word. (For example, when trying to explain an Arapaho form for which his children have a simple English equivalent acquired in school. This phenomenon should not be explained entirely in terms of bilingualism; it aims primarily at the perfection of the native tongue, for the furthering of which an Arapaho parent happens to have at his disposal an additional linguistic system.) In the wintertime, Mr. Goggles enjoys telling tales to his children in Arapaho, though the somewhat traditional style of the narratives presents special difficulties to the hearers more familiar with the current colloquial style.[9]

The Christianity complex was introduced to the Northern Arapaho toward the end of the nineteenth century, and it necessarily brought a number of new concepts with it. That this situation was resolved in Arapaho is demonstrated by the fact that on certain occasions sermons based on scriptural texts are given in the native language by a blind Indian known as Oscar. Prayers within the family circle, such as those used in the sweat lodge, contain only two non-Arapaho elements, *Jesus Christ* and *amen*. The words *Catholic*, *Episcopalian*, and *Baptist* have Arapaho equivalents, meaning (*wears*) *long dress*, (*wears*) *white dress*, and *puts you in the water*, respectively.

Each Arapaho on the reservation has both English and Arapaho names. The English family names (Shakespeare, White Plume, Goggles) were arbitrarily assigned to the bearers or their forefathers near the

[7] This implies, from the illustrations given to me in the field, convergence on the lexical and morphological level. Thus, to give at least one example, [tɛ·bíhɪnɔ·] is now used, on the basis of the English model, by the younger Arapaho speakers for both *I break* and *I am broke*, thereby abandoning at least one possible genuine way of conveying the idea.

[8] The impact of the Occidental culture upon the Arapaho language will be given a systematic linguistic treatment in a future paper.

[9] Cf. Zdeněk and Joy Salzmann, Arapaho Tales I, Hoosier Folklore 9.80–96 (1950), introduction and fn. 4.

turn of the century. English first and middle names are given to children at birth or baptism. Under these English names, the Arapaho are registered with the government agency at Fort Washakie, Wyoming. Besides these legal names, all tribesmen have Indian names given to them in their childhood by their parents. These names, such as [ni·ʔéhi· kɔyóhʔɔ] *bird that is taking off* for Edward G. Hopper, may be exchanged during an Arapaho's lifetime for a name vacated by a relative or friend (by death or change).

Riverton and Lander, small cities on the perimeter of the reservation, each some twenty-five miles from Ethete, are frequently visited by the Arapaho.[10] The former is known to them in their native language as [hó·xɔnóɔ] < [hó·xɔnóɔ ní·čihéhɛʔ] *across the river*, i.e., the Wind River, the latter as [hɔwóxʔɔ·wu·] *many houses.* Ethete itself is of Arapaho origin (< [hí·θɛtɪʔ] *it is good*).

It must now be quite evident that there is hardly any aspect of the encroaching Occidental culture which Arapaho has not been able to cope with in its own terms. *Dime* and *quarter*, *banana* and *whiskey*, *smallpox* and *tuberculosis*, *manure spreader* and *camera*, came to be denoted by native terms just as *buffalo* and *horse* once did.[11] Hence, we conclude that the linguistic system of Arapaho is uninhibited (rather than inhibited) when faced by a foreign culture.

[10] Cf. Gross's paper cited in fn. 3.

[11] The implications of the existence of such words as [hɛ·nísɔnɔʔwóxu·hɔ·x] *giraffe* (*long-necked horse*) is still more significant.

SEX GENDER IN CENTRAL AMERICAN CARIB

DOUGLAS TAYLOR

DOMINICA, BRITISH WEST INDIES

1. Gender in third person singular
2. Analogical extension of gender in borrowings
3. Speaker-involved gender
4. Sub-classes of nouns according to gender

1. In this modern dialect of Island Carib, as in that of seventeenth century Dominica, masculine and feminine genders are distinguished in all words bearing pronominal affixes of the third person singular, and in them alone. The affixes in question are: l- and -i for masculine, t- and -u ~ -ų for feminine reference; and since these serve as well for actor as for goal or possessor, and may stand in cross-reference with a noun, their frequency is high. So, for example: lerega túguci lų *he-said her-father him-to*, for *her father said to him*; lamulę túguci *his-younger-brother her-father*, for *her father's younger brother*; iabai *he will be here*, iabaų *she will be here*, larihubaų *he will see her*, tarihubai *she will see him*. The employment of one or the other of these affixes in reference to people, creatures, or things entails, with but few exceptions, no further change in the word to which it is attached; and these exceptions are more apparent than real, since they seem to result from a combination of prefix with corresponding suffix together with the use of vocalic harmony, as in: ligira *yon masculine (one)*, tugura *yon feminine (one);* or: ligía *(it)is he/it*, tuguia *(it) is she/it*; the former pair belonging to a class which is analogous both to our limiting adjectives and to our demonstrative pronouns (as which they may, moreover, replace personal nouns), while the latter form part of a paradigm whose members function as verb substitutes.

2. Masculine pronominal affixes are employed in reference to men and most males, feminine pronominal affixes in reference to women and most females; but when sex is absent (as in the case of objects) or obscure (as in that of flora and some fauna), masculinity and femininity are assigned in accordance with a functional or qualitative classification of the things themselves, rather than being determined by the form or origin of the words used to name them, as in French, Spanish, or Italian. There can, therefore, be no synonymous or near synonymous nouns of different gender; such recent loans as: eruplénu *aeroplane*, karu *motor-car*, uapauru *steamer* (Sp. vapor), being feminine since they belong, as vehicles, in the same class with native: ugunei *boat*, guŕiara *dugout canoe*. Thus, the words for *bird*, *cloth*, *container*, *fish*, *knife*, *snake*, *tree/stick/wood*, are feminine, as are the names of most species of birds, fish, snakes, and trees, of all garments except the *hat*, of most boxes, baskets, buildings, cans, trays, troughs, and vehicles, of most cutting instruments, and of most crawling insects. The names of most body parts and products, of flying insects and wild plants, and the words for *sun* and *moon* are masculine; while the word for *star*, and the names of most domesticated plants are feminine. So, borrowed míligi *milk*, and native hitao *blood*, are masculine; borrowed gafe *coffee*, and native gąhį *manioc*, being feminine. Sometimes the principle upon which gender is assigned is not clear; thus borrowed feį *bread* is feminine, while native areba *cassava-bread* is masculine, and the eminently domesticated *maize* (auasi) is unexpectedly masculine. However, while the criterion as we see it may not rest upon anything in the practical world, it does appear to refer

to some ideal principle conceived of as inhering in the things to which one or the other gender is assigned.

3. However, here another complication arises. While the names of most (though by no means all) concrete objects are assigned one and the same gender by all Carib speakers, the names of qualities, states, actions, and the impersonal *it* of such expressions as: *it is raining, it is so*, tend to be treated as masculine by the women, and as feminine by the men. So, for example, as an equivalent to our *the other day*, the former employ: ligíra buga, the latter: tugúra buga, that is: *yon-masculine* (*one*) and *yon-feminine* (*one*) respectively, followed by the particle of past tense. Whether or not the pronominal prefixes, l- and t-, here refer to an unspoken ueiu, I could not determine; but I was told that this word might sometimes be referred to as feminine when its meaning was *day* or *time*, but never when its meaning was *sun*. On the other hand, in a conversation between two women, the word dogó, denoting the performance of a certain ancestral rite, was referred to by one as masculine, and by the other, in the very next utterance, as feminine. Great glee was caused by my remarking on this fact, and I was told that the latter woman liked to talk like a man. Moreover, when quoting real or imaginary conversations between men, all women resort to this trick of making all non-concrete nouns feminine, although in actual fact, perhaps a minority of the men still employ feminine pronominal affixes quite naturally when referring to such matters.

Concrete nouns admitting of a double gender are more rare. Thus, apart from the words for *throat, heart, male genitalia, uvula, blood-vessel, uterus, intestine, soul* (animating spirit), *tongue, liver*, and *stomach*, all of which are consistently feminine, all body parts are nearly always treated as masculine, although I was told that some men treat some others, such as agu *eye*(*s*), as feminine. It is interesting to note, in this connection, that Breton's records show such inconsistency to have existed three hundred years ago; cf. his: "Belépeti ácou *gros yeux ouverts*," "logóatou ácou *gros oeil*," the first being treated as masculine, since the attribute has the pronominal suffix -i, the second as feminine, since the attribute has the feminine suffix, -u ("-ou"); both being grammatically singular, since *eyes* are not considered to be animate beings, and therefore cannot be referred to by plural pronominal affixes. Similarly with some other nouns whose gender is today quite fixed, such as duna *water* or *river*, barana *sea*, both masculine; Breton has: "*Eau fresche* tílitou tona" (feminine), but: "*Eau sallée* báchueti tóna" (masculine); "chalícouatou balanna" (feminine) but "choubícouati balánna" (masculine).[1]

4. Seventy three years ago, Lucien Adam, in his Introduction to a new edition of the Grammaire Caraibe, accuses Breton of having taken for the "distinction aryenne du genre masculin et du genre féminin" something which was quite different, and of having distinguished a third gender, "le neutre ou le commun."[2] What Breton meant by "le commun," as he makes perfectly clear, is that some words, such as those for *god*(*ess*), *child*, etc., might refer to either sex, just as in French one may speak of "un enfant," or "une enfant;" while of the neuter, he says explicitly, "pour le neutre, les Caraibes n'en usent point."[3] On the question of gender, Adam concludes:

"In reality, there were neither two nor three genders in Carib, but only a *virile* class opposed

[1] Raymond Breton, Dictionaire Caraibe-François, facsimile of the original edition published MDC LXV. at Auxerre, (Leipzig, 1892) p. 17; and op. cit. facsimile of the original edition published M.D.C. LXVI. at Auxerre, (Leipzig 1900). pp. 129, 130, 243, 263.

[2] Raymond Breton, Grammaire Caraibe, Nouvelle Edition, (Paris, 1878) pp. xi, xii.

[3] op. cit. pp. 9–16.

to a class which I shall call *metaviirle*, and sexual doublets arising from the fact that for one reason or another there existed, at least in part, a speech belonging to the women beside a men's speech."

What Breton did not make clear and what Adam did not understand is that while Island Carib has only two genders, distinguished by third person singular pronominal elements alone, the noun-gender, or rather the nouns in this language are of three kinds: those which are consistently masculine, those which are consistently feminine, and those which may be masculine or feminine according to the sex or individual speech-habits of the speaker. There can be little doubt that at one time this third category was treated as consistently feminine by the men, and as masculine by the women; but in view of the fact that the overwhelming majority of nouns denoting concrete objects may be referred to only by pronominal affixes proper to one of these genders, it seems misleading to deny that this language has grammatical sex gender, in the same way as it would be to deny the existence of this category in French on the grounds that sa tante may mean either *his aunt* or *her aunt*.

ZOQUE II: PHONEMES AND MORPHOPHONEMES*

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3.18. Assimilation

1.0. Table of phonemes (Table 1). References after terms are to the relevant sections below in which the terms are discussed.

Chart of consonants

Voiceless stops (**1.1.1**):	p	t	tʸ,	č	k
Voiced stops (**1.1.2**):	b	d	dʸ,	j	g
Noncontrastive stop (**1.2**).		c			
Glottal stop (**1.3.1**).					ʔ
Spirants (**1.3.2**).	f	s		š	h
Nasals (**1.4.1**).	m	n		ñ	ŋ
Liquids (**1.4.2**).		l, r, rˑ			
Semivowels (**1.4.3**).	w			y	

Chart of Vowels

High (**1.5.1**)	i	ʌ	u
Mid (**1.5.2**):	e		o
Low (**1.5.3**):		a	

1.1. Consonants showing phonemic contrast as regards voicing are the voiceless stops and the voiced stops; affricates are counted as stops.[1]

1.1.1. Voiceless stops p, t, tʸ, č, k have varying degrees of aspiration, depending on position. For č, the spirant release constitutes the aspiration. The aspiration is most conspicuous in utterance final position: cap *sky*, petet *spindle*, tʌk *house*. Before a vowel the aspiration is less conspicuous: kaʔpa *he dies*, wetu *fox*, čʌhku *he did it*. In the one cluster of two identical voiceless stops, tt, the first member is unreleased and the cluster is actualized phonetically as a long consonant. In clusters which have a voiceless stop before a nasal or another voiceless stop, the aspiration consists of a release or open transition before the second consonant of the cluster: petkuy *broom*, čʌkpa *he does it*, čʌknaʔcu *he frightened him*, witwitnayu *he walked around*.

p is bilabial: pata *mat*, kopak *head*, cap *sky*, nehpu *he kicked*, kompagre *compadre*.

* For Zoque I: Introduction and Bibliography, see IJAL 17.1–9 (1951).

[1] For a treatment of this phonemic analysis in contrast with a different phonemic analysis of the same language, see William L. Wonderly, Phonemic Acculturation in Zoque (**0.2**).

t is alveolar: tatah *father*, pet *centipede*, kentu?yu (~kendu?yu) *he was astonished*, kwanto *how much*, pehtu *he swept*.

t^y is a stop produced with the blade of the tongue in alveopalatal position and the tip down: t^yatah *his father*, t^yat^ya *little*, na t^yuhu *he is shooting*.

č is an alveopalatal affricate produced in the same position as t^y: čehcu *he cut it*, ka?čus *fingernail*, r·ančo *ranch*, čaketa *jacket* ?anemuč *totoposte*.

k is velar, fronted before front vowels and y, backed before back vowels: kina *nose*, kyama *his cornfield*, kunu *he fell*, čahku *he left it*, čikpa *he skins it*, čiks *small*, sak *beans*, ?aŋka emphatic particle.

1.1.2. Voiced stops b, d, d^y, ǰ, g are strongly articulated after nasals: mbama *my clothing*, ki?mdamu *you* (pl.) *went up*, minge?tu *he also came*. They are less strongly articulated in other positions, and have spirantal character when they occur intervocalically: bur·u *burro*, ?abena *oatmeal*, komagre *comadre*, presidente *president*.

b is bilabial: mbata *my mat*, kenba *he sees*, bisita *visit*, r·epúblika *republic*, sabado *Saturday*.

d is alveolar when after nasals: ndatah *my father*, myaŋdamu *you* (pl.) *went*, kwando *when*. In other positions it is dental-alveolar: dañi *Daniel*, sabado *Saturday*.

d^y is alveopalatal, corresponding in position to t^y of the voiceless series: na d^yuraca hku *it is lasting*, ?ad^yo?pya *he is sleepy*.

ǰ is an alveopalatal affricate corresponding to č of the voiceless series: ñǰehcu *you cut brush*, ñǰaketa *my jacket*, ka?nǰi *turkey*. Note that ǰ occurs only after nasals. Its phonemic character is shown by contrast with č when the latter occurs voiceless after nasals in Spanish loans; e.g. r·ančo *ranch*, pančo *Frank*, punči (loan?) *egg-nog*.

g is velar, fronted before front vowels and y, backed before back vowels: gišpiŋ *Crispín*, gayu *rooster*, ŋgenge?tu *I also saw it*, ŋgyunu *you fell*, maŋgo *mango*, paga *pay*.

1.2. Noncontrastive stop c is phonetically an alveolar affricate. It has voiceless and voiced allophones which correspond to the phonemically voiceless and voiced series of **1.1.** The allophones of c are in complementary distribution and hence do not show phonemic contrast. c is voiced after nasals: ncima *my calabash*, wanca?yu *he quit singing*. In other positions it is voiceless: cima *calabash*, puci *trash*, co?ckuy *beginning*, pac *skunk*.

1.3. Voiceless consonants which do not have contrastive voiced consonants are the glottal stop and the spirants.

1.3.1. Glottal stop ? is unaspirated when followed by a nasal: wa?na *sand*, pu?mna *hill*. It is also unaspirated when followed by any consonant in the same syllable; if the second consonant is a stop, the ? usually has close transition with it: po?k *knot* (contrast pok *water-gourd*), ku?tpa *he eats*, ta?ŋguy *bell*, ñu?spa *he covers it*, panhi?ŋ *with the man*.

? is also unaspirated in syllable initial position, and when initial in the utterance it is difficult to detect phonetically: ?aci *older brother*, ?oma *taste*, ?anima *soul*. Its phonemic presence is attested initially when y is inserted: ?yaci *his older brother* (contrast yaci *wicked*), ?yoma *its taste* (contrast yomo *woman*), ?yanima *his soul*.

? is aspirated when in syllable final position (except before nasals as above). The aspiration consists of a voiced or voiceless partial rearticulation of the preceding vowel: po?kis *of the knot*, ku?tu *he ate*, hu?ki *vulture* (contrast huki *cigarette*), na? *water*.

1.3.2. Spirants f, s, š, h.

f is labiodental: fiŋka *plantation*, flawta *harmonica*.

s is an alveolar sibilant: sis *meat*, kose *older sister*, sohsu *I cooked it*, kʌsmʌ *above*, mismo *the same*, winsa?u *he came to life.* s is voiced before voiced stops: lusbél *Lucifer*, husgacʌhku *he judged.*

š is an alveopalatal sibilant: šohšahu *they cooked it*, ?akuša *needle*, šegicʌkpa *he follows it*, hekšahpa *they hurry.*

h is a glottal spirant with or without friction, depending on the articulatory position. Its articulatory position is assimilated to that of a contiguous vowel:[1] wihtu *he walked*, ?uhku *he drank*, tuh *rain*, hahku *he crossed over*, sah *wing.* In word final position, especially after mid or low vowels and when unstressed, h is difficult to detect phonetically except by the absence of any glottal affectation (cf. **1.5**): tatah *father*, poyah *moon* or *month* (contrast poya *run!*), hʌyʌh *immature corn ear* (contrast hʌyʌ *flower*). It becomes more conspicuous when followed by another consonant: poyahta?m *months*, tatahta?m *fathers.*

1.4. Voiced consonants which do not have contrastive voiceless consonants are the nasals, liquids, and semivowels.

1.4.1. Nasals m, n, ñ, ŋ.

m is bilabial: maca *star*, mbama *my clothing*, kama *cornfield*, camcamnayu *he chatted*, kom *post.*

n is alveolar: nas *earth*, suni *desire*, kenba *he sees*, cin *pine.* Word initial clusters ny, nw, nh are set up in which n is indeterminate as to point of articulation and is actualized as a nasalization of the y, w, h: nyomo *my wife*, nwakas *my cow*, nhuče?ka *when?*, nhuki *my cigarette.*

ñ is alveopalatal: ñanah *his mother*, suñi *pretty*, miñahu *they came*, šuhpuñbuñ *soapberry.*

[1] Zoque h is approximately equivalent to Spanish j; the latter is essentially unchanged in words borrowed into Zoque, and is here written h.

ŋ is velar: ŋgenu *I saw it*, maŋu *he went*, maŋba *he goes*, ciŋyahpa *they bathe*, kaŋ *jaguar.*

1.4.2. Liquids l, r, r·.

l is an alveolar lateral: lahpa *Raphael*, wilo *mico de noche*, ?uli *rubber*, liŋba *he slashes*, mil *thousand*, loko *angry*, cʌpʌwil *quelite*, mali *Mary.*

r is the Spanish alveolar flap: pero *but*, libra *pound*, murus mok *millet.*

r· is the Spanish alveolar trill: r·ey *king*, syer·a *saw*, loktór· ~ doktór· *doctor.*

1.4.3. Semivowels w, y.

w is bilabial, rounded except in the cluster wy (see below): win *face*, powa *burn it!*, ?awu *grasshopper*, čʌkwa?a *he already did it.*

y is alveopalatal: yoyah *pig*, hyuyhayu *he bought it for him*, ha?n hyuyi *he does not buy it*, kuy *tree*, cay *rope.*

The cluster wy is actualized as an unrounded bilabial spirant with the tongue in palatal position: wyin *his face*, nʌ wyihtu *he is walking.* When the following vowel is mid or low, the cluster ends in a palatal off glide: wyakas *his cow*, powya?a *he already ran*, nʌ wyehu *he is calling.*

1.5. Vowels are voiced, with allophones varying between oral and nasal under certain conditions.

In utterance final position, vowels optionally end in an unaspirated and weakly articulated glottal stop or affectation: kinʌ *nose*, poya *run!* (contrast poyah *moon*). (This glottal stop is never aspirated; furthermore, it disappears before a consonant: kinʌpak *nose-bone*, poya mih *run, you!* It is thus not to be confused with the phonemic glottal stop ?, which is aspirated when word final and which is preserved before another consonant: ca? *stone*, ca?ta?m *stones.*)

Vowels pattern in the morphophonemics of the language (see below, **3.14**) as high, mid, and low.

1.5.1. Vowels patterning as high vowels are i, ʌ, u.

i is high front, unround, varying from open to close: piŋu *he picked it up*, ʔihtu *he lives*, paki *hard*.

ʌ is unround, tense, usually nasalized, varying from mid back to high back position (its lowest variant being slightly higher and farther back than the vowel in English 'cup'): pyʌŋu *he broke it*, hʌyʌ *flower*, ʔʌh *I*, čʌkpa *he does it*.

u is high back, round, varying from open to close: pyuŋu *he scattered it*, ʔuhku *he drank*.

1.5.2. Vowels patterning as mid vowels are e, o.

e is mid front, unround, open: peka *old*, ʔehu *cough*, home *new*.

o is mid back, round, varying between open and close: pyoŋu *he burned it*, hokoh *smoke*.

1.5.3. The vowel a patterns as a low vowel: hayah *husband*, čahku *he left it*, ʔaka *edge*.

1.6. Stress. A satisfactory analysis of stress features has not been made. A general but incomplete statement is here given, intended as an aid to the reading of cited Zoque forms.

Stress groups vary with different utterances and different speakers. In general, a stress group may be said to consist of a single word (pʌn *man*, maŋu *he went*, maŋyahke?tutih *they went again*) or a close-knit phrase (maŋba minu *he is going to come*, maŋbatih minu *he is just going to come*).

Stress is usually on the penult of the stress group, with a secondary stress on the first syllable if there are three or more syllables: ['minu] *he came*, [ˌmin'ge?tu] *he also came*, [ˌminge? 'tutih] *he came again*, [ˌmindaŋge?'tutih] *you* (pl.) *came again*, [ˌmaŋba 'minu] *he is going to come*, [ˌmaŋbatih 'minu] *he is just going to come* (forms cited in brackets in this section are written phonetically with regard to stress only; ['] marks primary stress, [ˌ] secondary stress). If a monosyllabic word constitutes a stress group, the monosyllable is stressed: ['pʌn] *man*, [ˌmaŋba?s 'mbʌhku 'nʌ?] *I am going to get water* (two stress groups). If the stress group ends in a monosyllabic stem as a compound member, the monosyllabic stem is usually stressed: [ˌkasnam'bʌn] *ladino*, [ˌcinuh'pʌn] *bee*, [ˌcinuh'tʌk] *syrup-house*, [ˌmasan'nʌ?] *holy water*.

This stress is variable within certain limits. Certain forms which usually show penultimate stress may, under circumstances not defined here, shift the stress to a different syllable. Two examples are ['?estados '?unidos] *United States* for the more frequent [ˌ?es'tados ˌ?u'nidos], and ['tiyʌ '?ora ˌñjuku'mu] *what time did you leave?* (spoken repeatedly on one occasion by a drunk) for the more usual ['tiyʌ '?ora ˌñju'kumu]. Examples of shifted stress involving a final monosyllabic stem are [ˌcuni'pʌn] ~ [ˌcu'nipʌn] *Indian*; cf. [ˌmaŋba?s mbʌh'ku nʌ?] *I am going to get water* (a less frequent variant of the form given in the preceding paragraph; here nʌ? *water* is part of the stress group which it follows).

Further investigation of Zoque stress should be combined with an analysis of the intonational (pitch) features.

In the present transcription, stress is unmarked if it conforms to the usual Zoque pattern. There are a few words, however, whose usual stress is non-penultimate or is otherwise at variance with the usual pattern. For these we use an accent /ˊ/ over the vowel to mark primary stress. Some examples of these forms are onomatopoetic: ?éhkene *chachalaca* (species of bird), sikitíŋ *cicaida*. Other examples are Spanish loans: nasyóŋ *nation*, méhiko *Mexico*, r·epúblika *republic*, kotóŋ *native shirt for men*, loktór· ~ doktór· *doctor*.

2.1. Zoque words may begin in C-, CC-, CCC-, CCCC-.

2.1.1. Consonants appearing in word initial position as C- are: the stops p, b, t, d, tʸ, dʸ, k, g, č (but not ǰ), c, ʔ; all spirants f, s, š, h; the nasals m, n, ñ (but not ŋ); the liquids l, rˑ (but not r); both semivowels w, y. Examples: pʌn *man*, burˑu *burro*, tʌc *tooth*, duracʌkpa *it lasts*, tʸʌtʸʌy *little*, nʌ dʸuracʌhku *it is lasting*, kayu *horse*, gayu *rooster*, čoʔngoya *rabbit*, cin *pine*, ʔame *year*; fiŋka *plantation*, sʌk *bean*, šapun *soap*, hayah *husband*; mok *corn*, nak *frog*, ñanah *his mother*; lahpa *Raphael*, rˑančo *ranch*; win *face*, yati *anona*.

2.1.2. Certain word initial CC- clusters occur with the second member of the cluster a semivowel y, w or liquid l, r.

With y as second member, the first member of the cluster may be: stop (p, b, t, d, k, g, č, ʔ); spirant (f, s, h); nasal (m, n); liquid (rˑ); semivowel (w). Examples: pyama *his clothing*, byurˑu *his burro*, tyenda *store*, ḍyeta *diet*, kyenu *he saw it*, gyayu *his rooster*, čyapas *Chiapas*, ʔyane *his tortilla*; fyabrikacʌhku *he constructed it*, syerˑa *saw*, hyuki *his cigarette*; myok *his corn*, nyomo *my wife*; rˑyego *irrigated land*; wyaka *his basket*.

With w as second member, the first member of the cluster may be: stop (p, b, d, k); spirant (f, s, š, h); nasal (m, n); liquid (l, rˑ). Examples: pwertaʔŋi *to the door*, bweno *good*, dweño *owner*, kwento *story*; fweraʔohmok *outside*, swerte *fortune*, šwerte *his fortune*, hwes *judge*; mwestra *sample*, nwakas *my cow*, lwis *Louis*, rˑweda *wheel*.

With l as second member, the first member of the cluster may be: stop (p, t, k, g); spirant (f). Examples: platoʔmo *in a plate*, tlakwače *opossum*, klaru *clear*, glorya *heaven*; flawta *harmonica*.

With r as second member, the first member of the cluster may be: stop (p, b, t, d, k, g); spirant (f). Examples: presidente *president*, bruto *uncouth*, trampa *trap*, dril *drill cloth*, kristu *Christ*, grabeʔahpa *he gets worse*; fresko *cool*.

2.1.3. Certain word initial CC- clusters occur with the second member of the cluster a voiced stop (b, d, dʸ, ǰ, g) or noncontrastive stop (c) preceded by a homorganic nasal as first member.

With b as second member, the first member of the cluster is m: mbama *my clothing*.

With dʸ, ǰ as second member, the first member of the cluster is ñ: ñdʸuhu *you shot*, ñǰiŋu *you bathed*.

With g as second member, the first member of the cluster is ŋ: ŋgama *my field*.

With d, c, as second member, the first member of the cluster is n: ndatah *my father*, ncin *my pine*.

Certain CC- clusters also occur with h, w, y preceded by n (as in **1.4.1**) as though n were homorganic to the second member: nhayah *my husband*, nwakas *my cow*, nyomo *my wife*.

2.1.4. Certain word initial CCC- clusters occur with the second member of the cluster a voiced stop (b, d, g) preceded by a homorganic nasal as first member and followed by a semivowel y, w, or liquid l, r as third member.

Clusters with y as third member are mby, ndy, ŋgy: mbyʌn *you are a man*, ndyenda *my store*, ŋgyenu *you looked*.

Clusters with w as third member are mbw, ndw, ŋgw: mbwerta *my door*, ndweño *my owner*, ŋgwidacʌhku *I cared for it*.

Clusters with l as third member are mbl, ŋgl: mblatu *my plate*, ŋglamacʌhku *you prayed*.

Clusters with r as third member are mbr, ndr, ŋgr: mbrobacʌhkuʔs *I tried it*, ndrampa *my trap*, ŋgrus *your cross*.

Certain CCC- clusters also occur with h, w preceded by n (as in **1.4.1**) as though

n were homorganic to the second member; these clusters have a semivowel y, w as third member. Clusters are nhy, nwy, nhw: nhyuyu *you bought*, nwyehu *you cried out*, nhwes *my judge*.

2.1.5. Certain word initial CCC- clusters followed by e occur with a voiceless stop (p, t, k) as first member, followed by a liquid (l, r) as second member and a semi-vowel (w, y) as third member. Clusters are prw, pry, ply, trw: prweba *proof*, pryeto *Prieto* (surname), plyego *fold*, trweno *thunder*.

2.1.6. Word initial CCCC- clusters followed by e occur with a voiced stop (b, g) as second member, preceded by a homorganic nasal (m, ŋ) as first member. It is followed by a liquid (l, r) as third member and a semi-vowel (w, y) as fourth member. Clusters are mbrw, mbry, mbly: mbrweba *my proof*, mbryesa *my haste*, mblyego *my fold*.

2.2. Zoque words may end in -V (see sec. **2.4**), -C, or -CC.

2.2.1. Consonants appearing in word final[3] position as -C are: the voiceless stops p, t, č, k, (but not t^y); the noncontrastive stop c; the glottal stop ʔ; the spirants f, s, h (but not š); all nasals m, n, ñ, ŋ; the liquids l, $r^·$ (but not r); the semivowel y (but not w). Examples: cap *sky*, pet *centipede*, ʔanemuč *totoposte*, nak *frog*; toc *tongue*; kʌʔ *hand*; hakóp *Jacob*, nas *earth*, tuh *rain*; kom *post*, cin *pine*, šuhpuñbuñ *soapberry*, kaŋ *jaguar*; cʌpʌwil *quelite*, señór· *sir*; kuy *tree*.

2.2.2. Certain word final -CC clusters occur with ʔ as first member. The second member may be: voiceless stop (t, k); noncontrastive stop (c); nasal (m, n, ŋ); semivowel (y). Examples: toʔt *intestinal worm*, poʔk *knot*; tuʔc *tail*; pʌndaʔm *men*, ʔihtuʔn *there is, it is said*, tʌcʌʔŋ *iguana*; tukaʔy *three*.

2.2.3. Two word final -CC clusters occur with a voiceless stop (p, k) as first member, and s as second member. Examples: ʔips *twenty*, čiks *small*.

2.2.4. One word final -CC cluster occurs with y as first member followed by h. Examples: kamayh *oak*, tʌhkoyh *at the house*.

2.3. Zoque words may have word medial -C-, -CC-, -CCC-, -CCCC-. (For syllable division in these, see **2.6.**)

2.3.1. Consonants appearing in word medial position as -C- are: the stops p, b, t, d, t^y (but not d^y), č (but not ǰ), k, g, c, ʔ; all spirants f, s, š, h; all nasals m, n, ñ, ŋ; all liquids l, r, $r^·$; both semivowels w, y. Examples: mape *sterile*, tatah *father*, sabado *Saturday*, mbot^{y}i *clown*, moči *weak*, paki *hard*, paga *pay*, ʔece *dance*, kaʔe *sick*; kafe (∼ kahwe) *coffee*, sose *cooked*, napaši *dream*, tuhu *he shot*; tome *near*, suni *desire*, suñi *pretty*, čoŋu *he met him*; wilo *mico de noche* (species of mammal), pero *but*, bur·u *burro*; kowah *drum*, koya *tomato*.

2.3.2. Certain word medial -CC- clusters occur with the first member a voiceless stop (p, t, č, k), noncontrastive stop (c), or spirant (f, s, š, h). The second member

[3] Word final č and ñ are attested only in the examples cited here. Final l is attested only in the example cited and in a few Spanish loans: mil *thousand*. Word final ʔ has been observed only in monosyllables, either in free position or as final member of a compound: nʌʔ *water*, naknʌʔ *Iturbide* (place-name; lit. *frog-water*).

may be: voiceless stop (p, t, tʸ, č, k); noncontrastive stop (c); spirant (f, s, š, h); nasal (m, n, ñ); liquid (l, r); semivowel (w, y). Attested clusters are shown in the following chart:[4]

**	pt	ptʸ	—	pk	pc	—	ps	pš	ph	—	—	—	pl	pr	pw	py
tp	tt	—	**	tk	**	—	**	**	th	—	tn	—	—	tr	tw	ty
—	čt	—	**	čk	**	—	**	**	—	—	čn	čñ	—	—	—	—
kp	kt	ktʸ	—	**	kc	—	ks	kš	kh	km	kn	—	kl	kr	kw	ky
cp	ct	—	**	ck	**	—	**	**	ch	cm	cn	—	—	—	cw	—
**	**	**	**	**	**	**	**	**	**	**	**	**	fl	fr	—	—
sp	st	—	sč	sk	sc	sf	—	—	sh	sm	sn	—	sl	sr	sw	sy
—	—	—	—	šk	—	—	—	**	šh	—	—	šñ	šl	—	—	šy
hp	ht	htʸ	hč	hk	hc	—	hs	hš	**	—	hn	—	—	—	hw	hy

Examples: ñeptamu *you* (pl.) *kicked*, kiptʸo?yu *he wanted to fight*, nepke?tu *he also kicked*, kipcʌ?yu *he quit fighting*, kipsu *he thought*, kipšahu *they thought*, kiphayu *he fought for him*, ?yaplastacʌhku *he crushed it*, ?yaprobacʌhku *he approved it*, kipwa?a *he already fought*, kipyahu *they fought*; witpa *he walks*, nʌ wyittamu *you* (pl.) *are walking*, witke?tpa *he also walks*, pyethayu *he swept for him*, witwitnayu *he walked around*, ?yatraŋkacʌhku *he propped it*, petwa?a *he already swept*, setyembre *September*; pečtʌk *lean-to*, kečkʌ?mʌ *Ostuacán*, nʌ kyʌčkʌčnayu *it is ticking*, ?ičñapya *he bats his eyes*; čʌkpa *he does it*, ncʌktamu *you* (pl.) *did it*, čʌktʸo?yu *he wanted to do it*, ?yoknʌkcahku *he left it as an inheritance*, heksu *he hurried*, hekšahu *they hurried*, čʌkhayu *he did it for him*, kowatʌkmʌ *Tuxtla Gutiérrez*, čʌkna?cpa *he frightens him*, r·eklamacʌhku *he claimed it*, sekreto *secret*, kakwe *scorpion*, pokye?tu *he also ran*; ?ecpa *he dances*, ?ectayu *dancer*, ?ecke?tpa *he also dances*, ?echayu *he danced for him*, tʌcmen *toothache*, ?icnapya (∼ ?ičñapya) *he bats his eyes*, cicwa?a *it already tore*; ?aflihido *worried*, kofre *chest*; sospa *it cooks*, yostamu *you* (pl.) *worked*, yoske?tu *he also worked*, yosčʌ?yu ∼ yoscʌ?yu *he quit working*, fósforo *match*, šoshayu *she cooked it for him*, kʌsmʌ *above*, kasnambʌn *ladino*, ?eslabóŋ *fire striker*, ?israél *Israel*, šoswa?a *she already cooked it*, nasyóŋ *nation*; mʌškuy *ugly*, moshu?ki *species of vulture*, kašla?ane *bread*, yošyošñayu *he tinkered around*; ñehpu *he kicked him*, pehtu *he swept*, pehtʸahu *they swept*, ?ehčahu *they danced*, čʌhku *he did it*, ?ehcu *he danced*, ?ehsi *crab*, šohšahu *they cooked it*, kuhnayu *he knelt*, kahwe (∼ kafe) *coffee*, tuhyahu *they shot*.

Three types of non-occurring clusters are noted by ** on the above chart: (1) tt is the only geminate cluster of stops (others are reduced to a single consonant; see sec. **3.5**). (2) Clusters of -CC- whose first member is an alveolar or alveopalatal stop (t, c, č) do not have an alveolar or alveopalatal affricate or spirant (c, č, s, š) as second member. (3) f occurs as first member of a -CC- cluster only before a nasal or a liquid (l, r, w, y).

Similar to the above cluster types are two -CC- clusters with p, k as first member and glottal stop (?) as second member. Examples: kip?otoŋba *he quarrels*, pakak?-aŋsaŋ *cold season*.

Two -CC- clusters occur with s as first member and a voiced stop (b, g) as second member. Examples: lusbél *Lucifer*, husgacʌhku *he judged*.

2.3.3. Certain word medial -CC- clusters occur with the first member a nasal m,

[4] On this and succeeding charts of phoneme distribution, spaces marked with /**/ indicate combinations that are lacking and which are noted in a succeeding paragraph as limitations of the pattern. Spaces marked with /—/ indicate other combinations that have not been observed. Certain of these are theoretically possible; their nonoccurrence is in at least some cases due to the relative infrequency of the phonemes involved.

n, ñ, ŋ. The second member may be: voiced stop (b, d, dʸ, ǰ, g); noncontrastive stop (c); homorganic voiceless stop (p, t, k, č; the č appears after n as though homorganic to it); spirant (s, h, f; the f appears after homorganic m); nasal (m, n, ñ); semivowel (w, y). Attested clusters are shown in the chart:[5]

mb	md	mdʸ	—	mg	mc	mp	**	**	**	mf	—	mh	—	mn	—	mw	my
nb	nd	ndʸ	nj	ng	nc	**	nt	nč	**	**	ns	nh	nm	nn	—	nw	—
ñb	—	ñdʸ	ñj	—	—	**	**	—	**	**	—	—	—	—	—	—	—
ŋb	ŋd	ŋdʸ	ŋj	ŋg	ŋc	**	**	**	ŋk	**	ŋs	ŋh	ŋm	ŋn	ŋñ	ŋw	ŋy

Examples: camba *he speaks*, camdʌhka?opya *he mediates*, camdʸo?yu *he wanted to speak*, nʌmge?tu *he also said*, camcamnakyuy *conversation*, ñempe- *-ever*, pámfilo *Pánfilo*, čamhayu *he told him*, camcamnayu *he conversed*, camwa?a *he already spoke*, nʌmyahu *they said*; minba *he comes*, mindʌ?u *he intended to come*, kendʸo?pya *he wants to look*, pʌnǰʌki *image of a man*, kenge?tu *he also looked*, wancʌ?yu *he quit singing*, kwanto *how much*, rˑančo *ranch*, winsa?u *he revived*, kyenhayu *he looked on his behalf*, winma?ŋguy *Huimango* (place name), masannʌ? *holy water*, minwa?a *he already came*; šuhpuñbuñ *soapberry*, hañdʸ-u?nʌmis *you did not read it*, hañǰʌkʌmis *you did not do it*; maŋba *he goes*, tiŋdiŋ *thick*, ?ʌŋdʸo?pya *he is sleepy*, ?aŋǰi?u *goatee*, maŋge?tu *he also went*, ?aŋcoŋu *he answered*, ?ʌŋkʌ emphatic particle, ?aŋsis *lips*, myaŋhayu *he went for him*, ?a?yaŋmʌ *Ixhuatán*, ?aŋnaka *mouth*, ?aŋña *left*, ?aŋway *beard*, maŋyahu *they went*.

Non-occurring clusters noted by ** on the chart are those in which a voiceless stop or f would follow a heterorganic nasal.[6]

[5] See fn. 4.

[6] All clusters of nasal plus voiceless stop or f which occur are in Spanish loans, except the ones in ñempe (possibly a Spanish loan also) and? ʌŋkʌ given above, and in kentu?yu (~ kendu?yu) *he was astonished*. In Spanish morphophonemics (and phonemics), a nasal becomes a phoneme (or allophone [ŋ]) having the position of a following stop or f; it is also lost before a liquid. This accounts for the absence of clusters with p, t, č, k, f after a heterorganic nasal. However, we consider Spanish words as borrowed outright and thenceforward treated as single Zoque morphemes. We therefore do not discuss Spanish morphophonemics (3.0), and consequently these processes and certain others show up in our analysis only as phenomena of limited distribution.

2.3.4. Certain word medial -CC- clusters occur with ? as first member. The second member may be: voiceless stop (p, t, tʸ, č, k); noncontrastive stop (c); spirant (s, š, h); nasal (m, n, ñ, ŋ); liquid (l, r); semivowel (w, y). Examples: tʌ?pu (*the sun*) *set*, to?ti *blind*, ku?tʸahu *they ate*, ha?čo?mo *in debt*, hu?ki *vulture*; no?ce *wall*; no?se *nest*, mi?šu *cat*, či?hayu *he gave it for him*; ki?mu *he went up*, tʸu?nu *he looked at it*, tʸu?ñahu *they looked at it*, ka?ŋis *of a tiger*; pero?lis *of a copper kettle*, luga?royh *at a place*; ka?wa?a *he already died*, taka?yahu *it became bitter*.

2.3.5. Certain word medial -CC- clusters occur with the first member a semivowel (w, y) or liquid (l, r, rˑ). The second member may be: voiceless stop (p, t, tʸ, č, k); voiced stop (b, d, g); spirant (s, š, h); nasal (m, n), liquid (l), semivowel (w, y). Attested clusters are shown in the chart:[7]

—	wt	—	—	—	—	wd	—	ws	—	wm	—	—	**	wy
—	yt	ytʸ	—	—	—	—	—	—	yh	ym	yn	—	—	**
lp	—	—	—	lk	—	ld	—	ls	—	lm	—	—	—	ly
rp	rt	—	rč	rk	rb	—	rg	rs	—	rm	rn	rl	rw	ry
—	—	—	—	—	—	—	—	—	—	—	—	—	—	rˑy

Examples: flawta *harmonica*, dewda *debt*, kawsa *legal accusation*, rˑewma *common*

[7] See fn. 4.

cold, powya?a *he already ran*; pleyto *argument*, kuyt^{y}ʌm *avocado*, hyuyhayu *he bought it for him*, teymʌ *yonder*, r·eyna *queen*; kyulpa *his blame*, balkóŋ *balcony*, kaldu *broth*, kalsetíŋ *socks*, kalmacʌhku *it calmed*, čelyo *Cliserio*; kwerpo *body*, pwerta *door*, marča *march*, porke *because*, ?arbol *Christmas tree*, ?alargacʌhku *it lengthened*, marso *March*, ?armas *firearm*, ?ernesto *Ernest*, karlos *Carl*, sirwela *prune*, miyonaryo *millionaire*; kor·yentepʌ *common*.

Non-occurring clusters noted by ** on the chart are those in which a geminate w or y would appear.

2.3.6. Certain word medial -CC- clusters occur with the first member a voiced stop b, d, g. The second member may be: liquid (l, r); semivowel (w, y). Attested clusters are shown in the chart:

bl	br	—	by
—	dr	—	—
gl	gr	gw	—

Examples: dyablo *devil*, mbalabra *my word*, ?abyóŋ *airplane*; padre *priest* (some speakers), siglo *age*, pagre *priest* (other speakers), ?igwalacʌhku *he made himself equal* (*to something*).

2.3.7. Certain word medial -CCC- clusters occur with the first member a voiceless stop p, k, and the second member a spirant s, š. The third member may be: voiceless stop (p, t, č, k); spirant (h); nasal (n, ñ); semivowel (w, y). Attested clusters are shown in the chart:

psp	pst	—	psk	psh	psn	—	psw	—		
ksp	kst	ksč	ksk	ksh	—	—	ksw	ksy		
—	—	—	kšk	—	—	kšñ	—	—		

Examples: kipspa *he thinks*, kipstamu *we thought*, kipske?tu *he also thought*, t^{y}ʌpshayu *he twisted it for him*, paksapsapsnayu *he flapped his wings*, kipswa?a *he already thought*; pokspa *he sits*, hekstamʌ *hurry!* (pl.), poksčʌ?yu *he remained seated*, pokske-?tu *he also sat*, pyokshayu *he sat for him*, pokswa?a *he already sat*, leksyóŋ *lesson*; makšku?y *four*, yakšñʌ *destitute*.

2.3.8. Certain word medial -CCC- clusters occur with ? as first member. The second member may be: stop (p, t, k, c); spirant (s, š); nasal (m, n, ŋ); semivowel (w, y).

With a stop or spirant as second member, the third member may be: voiceless stop (p, t, t^{y}, k); noncontrastive stop (c); spirant (s, š, h); nasal (m, n); semivowel (w, y). Attested clusters are shown in the chart:

—	—	?pk	—	—	—	—	—	—	?pw	?py
?tp	?tt	?tk	—	—	—	?th	—	—	?tw	**
?kp	?kt	—	?kc	?ks	?kš	?kh	?km	—	?kw	?ky
?cp	?ct	?ck	—	—	—	—	—	?cn	?cw	**
?sp	?st	?sk	—	—	—	—	?sm	—	—	**
—	—	?šk	—	—	—	—	—	—	—	**

Examples: tʌ?pke?tu (*the sun*) *also set*, tʌ?pwa?a (*the sun*) *already set*, cʌ?pya *he stays*; še?tpa *he toasts it*, minge?ttamʌ *come again!* (pl.), še?tke?tu *he also toasted it*, še?thayu *she toasted it for him*, minge?twa?a *he already came too*; pi?kpa *he touches it*, wi?ktamʌ *eat!* (pl.), ñu?ksu *he borrowed it*, ñu?kšahu *they borrowed it*, pi?khayu *he touched it for him*, ?une?kmah *when still a child*, wi?kwa?a *he already ate*, wi?kyahu *they ate*; na?cpa *he fears*, ña?ctamu *you* (pl.) *feared*, ka?ckuy *cane-grinding*, čʌkna?-cna?cʌyahu *they frightened him*, ka?cwa?a *he already ground cane*; ñu?spa *he covers it*,

[7] In this group, clusters of y plus consonant except t^{y}, h occur in native Zoque words only after e; otherwise such clusters appear only in Spanish loans.

nu?stamba *you* (pl.) *cover it*, nu?skuy *blanket*; ki?ška?u *he got angry*.

With a nasal as second member, the third member may be: voiced stop (b, d, j, g); noncontrastive stop (c); spirant (s, h); nasal (m, n, ñ); semivowel (w, y). Attested clusters are shown in the chart:

?mb	?md	?mj	?mg	?mc	?ms	?mh	—	—	?mñ	?mw	?my
?nb	?nd	?nj	?ng	—	—	?nh	?nm	—	—	?nw	**
?ŋb	?ŋd	—	?ŋg	—	—	—	?ŋm	?ŋn	—	?ŋw	?ŋy

Examples: ki?mba *he goes up*, ki?mdamʌ *go up!* (pl.), ki?mjʌ?yu *he quit going up*, ki?mge?tu *he also went up*, ki?mcʌ?yu (~ ki?mjʌ?yu) *he quit going up*, wo?msoŋ *quail*, ki?mhayu *he went up for him*, wi?mñapya *he lies down*, ki?mwa?a *he already went up*, ki?myahu *they went up*; tototu?nba *he reads*, tu?ndamʌ *look at it!* (pl.), ka?ŋji *turkey*, tototu?nge?tpa *he also reads*, tʸu?nhayu *he looked at it for him*, tʸu?nwa?a *he already looked at it*; to?ŋba *he drinks*, to?ŋdamʌ *drink!* (pl.), to?ŋge?tu *he also drank*, kyʌ?ŋwa?a *he already painted it*, to?ŋyahu *they drank*.

With w as second member, the third member is y. The cluster is ?wy. Example: cʌ?wya?a *he already stayed*.

With y as second member, the third member may be tʸ or h. Clusters are ?ytʸ, ?yh. Examples: ñjʌ?ytʸamu *you* (pl.) *stayed*, čʌ?yhayu *he stayed for him*.

Non-occurring clusters noted by ** on the charts in this section are those in which y would follow the combination of ? plus an alveolar or alveopalatal consonant.

2.3.9. Certain word medial -CCC- clusters occur with the first member a spirant s, h, nasal m, n, ŋ, or liquid l, r. The second member may be: stop (p, t, k, b, d, g); spirant (f, s). The third member may be: liquid (l, r); semivowel (w, y). Some of the attested clusters are shown in chart A.[8]

[8] In this group the only clusters appearing outside of Spanish loans are hpy, hky. They form a native Zoque pattern with hmy of the last paragraph of this section.

Examples: ?yesplikacʌhku *he explained it*, dʸespresyacʌhku *he despised it*, despwés *afterward*, despyerto *awake*; maestru *teacher*, kristyano?s *of a Christian*; meskla *mortar*, ?eskribicʌhku *he wrote*, ?eskwela *school*; ndisfrutacʌhku *I enjoyed it*, ?esfwerso *effort*; dossyentos *two hundred*; kamahpyʌ *oaken*; kamahkyʌsi *on the oak*; ?empleado *clerk*, temprano *early*, ?impwesto *tax*; temblór *earthquake*, timbre *tax stamp*; komflikto *conflict*, ?imfraksyóŋ *violation*, komfyansa *confidence*; ?entre *between*; menswál *monthly*, ?intensyóŋ *intention*; ?iŋklinado *sloping*, ?iŋkrédulo *unbeliever*, ?yeŋkwadernacʌhku *he bound* (*a book*); rʌeŋglóŋ *line*, ?eŋgrudo *paste*; myaltratacʌhku *he mistreated him*; šorprendecʌhku *he surprised him*, serpyente *serpent*; porsyóŋ *portion*.

CHART A

spl	spr	spw	spy
—	str	—	sty
skl	skr	skw	—
—	sfr	sfw	—
—	—	—	ssy
—	—	—	hpy
—	—	—	hky
mpl	mpr	mpw	—
mbl	mbr	—	—
mfl	mfr	—	mfy
—	ntr	—	—
—	—	nsw	nsy
ŋkl	ŋkr	ŋkw	—
ŋgl	ŋgr	—	—
—	ltr	—	—
—	rpr	—	rpy
—	—	—	rsy

Similar to these cluster types is the -CCC- cluster hmy, with m as second member. Example: kamahmyoni *species of fungus*.

2.3.10. Word medial -CCCC- clusters occur with ?, k, s as first, second, and third members respectively. The fourth member of the cluster may be: stop (p, t, č, k); semivowel (w). The clusters are ?ksp, ?kst, ?ksč, ?ksk; ?ksw. Examples: ko?kspa *he*

snores, nu?kstamu *you* (pl.) *borrowed it*, ñu?ksči?u *he loaned it*, mi?kskʌ? *earthquake*, mi?kswa?a *it already shook*.

A few other types of -CCCC- clusters, not analyzed here, also occur.[9] Note the following random examples: nskr (konskripto *draftee*), mply (?amplyo *ample*), mflw (?imflwensya *influenza*).

2.4. All vowels occur in word final position; also between consonants or consonant clusters within the word: poka *egg*, kape *cane*, huki *cigarette*, kono *short*, punu *minnow*, haminʌ *he did not come*; pakak *cold*, petke?tu *he also swept*, ciŋu *he bathed*, mboŋu *I burned it*, kukpak *chest bone*, ncʌhku *I did it*.

Vowels also occur contiguous to vowels in ambisyllabic clusters:[10] maestru *teacher*, tio *uncle*, ndia *my aunt*.

Vowels do not occur in word initial position (except as preceded by ?: ?ame *year*, ?ehu *cough*).

2.5. Semivowels y, w are restricted in their distribution in certain positions before and after the vowels i, u respectively.

2.5.1. In word initial position as C-, y and w do not occur before i and u respectively. Examples before other vowels: yahu *it ended*, ye?ŋu *tall*, yoyah *pig*, yuhu *he cleaned it*, yʌk *black*; waka *basket*, wetu *fox*, wihtu *he walked*, wo? *hole*, wʌ?aŋhamba *he believes*.

As final member of a word initial CC-cluster (**2.1.2**) or CCC- cluster (**2.1.4**), w does not occur before u; the semivowel y occurs before i only when preceded by w as first or second member of such a cluster: wyin *his face*, nwyihtu *you walked*.

2.5.2. In word final position as -C, y does not occur after i. Examples of y after other vowels: cay *vine*, ley *law*, coy *liquor*, kuy *tree*, nʌy *name*. (w has not been observed in word final position; see **2.2.1.**)

2.5.3. In word medial position as -C-, y and w may occur after any vowel: hayah *husband*, ha?n kyeye *he does not appear*, piyunʌ? *sulfur water*, koya *tomato*, huyʌ *buy!*, hʌyʌ *flower*; ?awa *gourd*, niwi *chile*, kowi *ear*, tuwi *dog*, wʌwʌ *much*.

In word medial position as -C-, y and w may occur before any vowel. However, the attested occurrences of y before i are restricted to morpheme boundaries in which i belongs to one of certain morphemes (viz. a morpheme beginning with the morphophoneme X of **3.0** ff.: ha?n hyuyi *he does not buy it*. The attested occurrences of w before u are restricted to the words ?awu *grasshopper*, pawu *coyote*, lawus *nail*.

2.6. Three types of word medial syllable division are set up:[11] (1) before a syllable initial consonant, (2) before a syllable initial consonant cluster, and (3) between vowels.

2.6.1. A syllable initial consonant may be any consonant in intervocalic position (ku.nu *he fell*, sa.na.we.nes *trousers*, ka.?u *he died*, ha.yah *husband*); or a second member of a -CC- cluster (čʌh.ku *he did it*, čʌk.pa *he does it*, ka?.pa *he dies*, hek.su *he hurried*, pop.ya *he runs*, pow.ya.?a *he already ran*, čʌk.ya.hu *they did it*, nas.yóŋ *nation*, pog.re[12] *poor*).

The syllable initial consonant may also be

[9] In occasional Spanish loans.

[10] Only in Spanish loans.

[11] These divisions are set up without being objectively established by means of instruments. Alternate descriptions based on a different statement of syllable division are also possible, but the one given here appears to be as concise and adequate as any. In **2.6** and **2.7** a period (.) is used to mark syllable division.

[12] Note that Spanish loans, which are phonetically the same as in Spanish with respect to syllabicity, are set up as having structurally a syllable division which corresponds to the Zoque pattern rather than one which necessarily follows the traditional analysis of Spanish.

a stop, spirant, or nasal as final member of a -CCC- or -CCCC- cluster (heks.pa *he hurries*, ko?ks.pa *he snores*, makš.ku?y *four*, ñu?k.su *he borrowed it*, ?u.ne?k.mah *when still a child*).

2.6.2. A syllable initial consonant cluster is the combination of consonant plus semivowel or liquid when preceded by one or two consonants in the same (-CCC- or -CCCC-) cluster (cʌ?.wya.?a *he already stayed*, ki?.mya.hu *they went up*, ka.mah.kyʌ.si *on the oak*, lek.syóŋ *lesson*, pok.swa.?a *he already sat*, ?es.kwe.la *school*, rˑeŋ.glóŋ *line*, saŋ.gre *blood*, ma.es.tru *teacher*; ñu?k.swa.?a *he already borrowed it*).

2.6.3. Syllable division before a syllable initial vowel means the syllabic bondary lies between contiguous vowels[13] (la.u.na *lake*, ndi.o *my uncle*, ti.a *aunt*, ma.es.tru *teacher*).

2.7. With the syllable divisions set up as in **2.6**, it may be said syllables begin in V, C, CC, CCC, CCCC; and end in V, C, CC, CCC.

Syllables beginning in CCC or CCCC occur only in word initial position. Syllables beginning in V occur in word medial and word final positions. Syllables beginning in C or CC occur in all these positions.

Syllables ending in CCC occur in word initial and word medial positions. Syllables ending in V, C, or CC occur in all positions.

Syllable types limited to word initial position are: CCCV ŋgye.nu *you looked*; CCCVC ŋgyen.ba *you look*; CCCVCC mbyo-ks.pa *you sit*; CCCVCCC ŋgyo?ks.pa *you snore*; CCCCV mbrwe.ba *my test*; CCCCVC ŋglyen.te *my client*.

Syllable types limited to word initial and word medial positions are: CVCCC ñu?ks.pa *he borrows it*, yah.nu?ks.pa *he makes him borrow it*; CCVCCC myo?ks.pa *he hobbles* (*a horse*).

Syllable types limited to word medial and word final positions are: V ti.o.ko.to.ya *for an uncle*, ndi.a *my aunt*; VC ma.es.tru *teacher*, ka.per.na.úm *Capernaum*; VCC hu.-di.o?s.ta?m *of the Jews*, ndi.o?s *my uncle's*.

Syllable types occurring in all positions are: CV tu.wi.ko.to.ya *for a dog*; CVC ken.-ge?.tu *he also looked*, ko.pak *head*; CVCC poks.ke?t.pa *he also sits*, tu.ka?y *three*; CCV kye.nu *he saw it*, ka.mah.kyʌ.si *on the oak*, ka.mah.pyʌ *oaken*; CCVC kyen.ba *he sees it*, ka.mah.kyʌs.mʌ *above the oak*, ka.mah.kyuy *oak tree*; CCVCC kyʌ?s.pa *he bites it*, pyo?k *its knot*.

3.0. This chapter gives morphophonemic changes that occur within the word where morpheme boundaries are involved. Note that certain of the phonemic combinations which undergo change when between morphemes occur unchanged when within single morphemes.[14]

Five morphophonemic symbols are used for explicating.

N = a nasal homorganic to a following stop; n before w, y, h; zero in all other positions (see **3.10**).

M = a nasal homorganic to a following stop; m in all other positions (see **3.10**).

X = phonemically zero (always); it is set up as initial in certain suffixes that begin with a vowel but which pattern differently from others that begin with a vowel. When such a suffix follows a morpheme ending in a cluster of h plus consonant, the h is lost; when it follows a morpheme ending in vowel plus ŋ, the ŋ is replaced by w; when it follows a morpheme ending in h, the h is replaced by y or w. All morphemes which show vowel harmony (and some which do not) pattern as beginning with X (see **3.14**).

[13] This pattern appears only in loan words.

[14] Such combinations appear chiefly in Spanish loans. Note for example: tyenda *store*, syego *blind* (contrast **3.1**) rˑeyna *queen* (contrast **3.2.3**); kayte *sandal* (contrast **3.2.4**); kampo *airstrip*, kwento *story*, rˑančo *ranch*, sinko?yh *five centavos' worth* (contrast **3.9**). Note also the clusters hpy, hmy, hky, formed in native Zoque words by **3.2.6** (contrast **3.7.1**).

$^{I}/_{e}$ = i when the vowel of the preceding syllable is high (i, ʌ, u); e when the vowel of the preceding syllable is low or mid (a, e, o) (see **3.14.1**).

$^{a}/_{ʌ}$ = a when the vowel of the preceding syllable is mid (e, o); ʌ when the vowel of the preceding syllable is low or high (a, i, ʌ, u) (see **3.14.2**).

The symbols V and C in this chapter, as elsewhere, are not morphophonemic symbols but are used to indicate an unspecified vowel or consonant in formulae.

3.1. When an alveolar consonant t, d, c, s, n (but not N) precedes y, the alveolar consonant is changed to the corresponding alveopalatal consonant and the y is lost. In formula: t + y > tʸ; d + y > dʸ; c + y > č; s + y > š; n + y > ñ. Examples: wiht- *to walk* + -yah- suffix: wihtʸahu *they walked*; y- prefix + duracʌhk- *to last* > *dyuracʌhk- (by **3.2.3**) > dʸuracʌhk-: nʌ dʸuracʌhku *it is lasting*; me?c- *to seek* + -yah- suffix: mye?čahu *they sought it*; sohs- *to cook* + -yah- suffix: šohšahu *they cooked it*; ken- *to see* + -yah- suffix: keñahu *they looked* (but N- prefix + yomo *woman* > nyomo *my wife*).

3.2.1. When y (initial; after a vowel other than e; or after N) precedes a bilabial consonant p, b, f, m, w, velar consonant k, g, or glottal stop ?, the y undergoes metathesis with the consonant. In formula: y + p, b, f, m, w, k, g, ? > py, by, fy, my, wy, ky, gy, ?y, respectively.

Examples in word initial position: y- prefix + pata *mat* > pyata *his mat*; y- prefix + pyesa *room* > *pyyesa > pyesa (by **3.5**) *his room*; y- prefix + burʷu *burro* > byurʷu *his burro*; y- prefix + faha *belt* > fyaha *his belt*; y- prefix + mula *mule* > myula *his mule*; y- prefix + wakas *cow* > wyakas *his cow*; y- prefix + kama *cornfield* > kyama *his cornfield*; y- prefix + gayu *rooster* > gyayu *his rooster*; y- prefix + ?aci *older brother* > ?yaci *his older brother*.

Examples after vowels: poy- *to run* + -pa suffix > popya *he runs*; kuy- (~ ku?y-) *seven* + -mʌy suffix > kumyʌy *a week hence*; cay *vine* + -kʌsi suffix > cakyʌsi *on the vine*; takay *bitter* + -?ah- suffix: taka?yahu *it became bitter*; poy- *to run* + -wa?a suffixes[15] > powya?a *he already ran*.

Examples after: N Ny- prefix + puht- *to go out* > *mpyuht- (> mbyuht- by **3.9**): mbyuhtu *you went out*; Ny- prefix + burlacʌhk- *to scoff*: mbyurlacʌhku *you scoffed*; Ny- prefix + wiht- *to walk*: nwyihtu *you walked*; Ny- prefix + ken- *to look* > *ŋkyen- (> ŋgyen- by **3.9**): ŋgyenu *you looked*; Ny- prefix + gustacʌhk- *to enjoy*: ŋgyustacʌhku *you enjoyed yourself*.

When y occurs after e and precedes ?, metathesis occurs. In formula: ey + ? > e?y. Example: rʿey *king* + -?aŋʌ suffix > rʿe?yaŋʌ *to the king*. When y occurs after e and precedes certain other of the above named consonants, the cluster yC remains unchanged. Examples: tey *there* + -mʌ suffix > teymʌ *there*; ley *law* + -kʌ?mʌ suffix > leykʌ?mʌ *under law*.

3.2.2. When y precedes h in word initial clusters, the y undergoes metathesis with the h. In formula: y + h- > hy-. Examples: y- prefix + hayah *husband* > hyayah *her husband*; y- prefix + huy- *to buy*: hyuyu *he bought it*; Ny- prefix + hayah *husband* > nhyayah *you are the husband*. When y precedes h in non-initial position, the cluster yh remains unchanged. Examples: kuy *wood* + ham *lime* > kuyham *ashes*; kay *narrow* + hu?ti *thread* > kayhu?ti *fine thread*.

3.2.3. When y precedes an alveolar consonant d, c, s, n (see **3.2.4** for t), metathesis occurs followed by palatalization of the alveolar consonant and loss of the y (as in **3.1**). In formula: y + d, c, s, n > *dy, *cy, *sy, *ny > dʸ, č, š, ñ. Examples in word initial position: y- prefix + duracʌhk- *to last*: nʌ dʸuracʌhku *it is lasting*; y- prefix

[15] -wa?a < -u + -a?a; see **3.15.2** for consonantalization of u to w.

+ cʌhk- *to do*: čahku *he did it*; y- prefix + sʌk *beans* > šʌk *his beans*; y- prefix + swerte *fortune* > šwerte *his fortune*; y- prefix + nanah *mother* > ñanah *his mother*. Examples after vowels: poy- *to run* + cuʔkum- *to go out*: poču ʔkumu *he went out running*; kuy *tree* + suʔc *nit* + moni *mushroom* > kušuʔcmoni *species of tiny mushroom*; kuy *tree* + nʌʔ *water* + -mʌ suffix > kuñʌʔmʌ *Coapilla* (place name). Example after N: Ny- prefix + ciŋ- *to bathe* > *ñčiŋ- (> ñjiŋ- by **3.9**): ñjiŋu *you bathed*.

3.2.4. When y precedes t in word initial clusters, metathesis occurs followed by palatalization of the t and loss of the y (as in **3.1**). In formula: y + t- > tʸ-. Examples: y- prefix + tatah *father* > tʸatah *his father*; y- prefix + tih- *to arrive* > tʸih-: nʌ tʸihu *he is arriving*; Ny- prefix + tih- *to arrive* > *ñtʸih- (> ñdʸih- by **3.9**) : nʌmih ñdʸihu *you are arriving*.

When y precedes t in non-initial clusters, the t is palatalized to tʸ but no metathesis or loss occurs. In formula: y + t > -ytʸ-. Examples: tey *there* + -tih suffix > teytʸih *right there*; yʌy *here* + -tih suffix > yʌytʸih *right here*; kuy *wood* + tʌm *seed* > kuytʸʌm *avocado*; huy- *to buy* + -tam- suffix: huytʸamʌ *buy!* (pl.).

3.2.5. When y precedes an alveopalatal consonant č, š, the y is lost. Examples: y- prefix + čoʔngoya *rabbit* > čoʔngoya *his rabbit*; y- prefix + šapun *soap* > šapun *his soap*.

When y precedes a word initial CC-cluster whose first member is p, b, k, g, f, h, m, rʻ and whose second member is w, l, r, the y is lost. Examples: y- prefix + plato *plate* > plato *his plate*; y- prefix + primo *cousin* > primo *his cousin*; y- prefix + brúhula *compass* > brúhula *his compass*; y- prefix + kwarto *room* > kwarto *his room*; y- prefix + grabeʔah- *to get worse*: nʌ grabeʔahu *he is getting worse*; y- prefix + fwersa *strength* > fwersa *his strength*; y- prefix + fruta *fruit* > fruta *his fruit*; y- prefix + hwes *judge* > hwes *his judge*; y- prefix + mwestra *sample* > mwestra *his sample*; y- prefix + rʻweda *wheel* > rʻweda *its wheel*.

3.2.6. When a cluster yh precedes a bilabial consonant p, m, or velar consonant k, metathesis occurs in which y becomes the final member of the cluster. In formula: yh + p, m, k > hpy, hmy, hky. Examples: kamayh *oak* + -pʌ suffix > kamahpyʌ *oaken*; kamayh *oak* + moni *mushroom* > kamahmyoni *species of mushroom*; kamayh *oak* + kuy *tree* > kamahkyuy *oak tree*.

3.2.7. When a cluster yh precedes an alveolar consonant (c is the one attested), metathesis occurs as in **3.2.6** followed by palatalization of the alveolar consonant and loss of the y (as in **3.1**). In formula: yh + c > *hcy > hč. Example: kamayh *oak* + cowa *cotton* > kamahčowa *oak-cotton gall*.

3.3. When y as final member of a consonant cluster (other than wy, nwy) precedes i, the y is lost. Most examples involve a previous metathesis of the type described in **3.2.1** and **3.2.2**:[16] cʌʔy- *to stay* + -i suffix: haʔn čʌʔi *he does not stay*; kuy *tree* + -pit suffix > *kupyit > kupit *with a tree*; kuy *tree* + -ʔis suffix > *kuʔyis > kuʔis *of a tree*; y- prefix + kiht- *to tear*: *kyihtu > kihtu *he tore it*; y- prefix + hitiʔ- *to pull*: *hyitiʔu > hitiʔu *he pulled it* (but y- prefix + win *self* > wyin *himself*; Ny- prefix + wiht- *to walk*: nʌmih nwyihtu *you are walking*).

3.4. When a nasal m, n, ŋ, or liquid r, l precedes ʔ, the cluster undergoes metathesis.

[16] In the case of y plus an alveolar consonant followed by i, the metathesis and palatalization (**3.2.3**) occur before the loss of y (which would occur anyway by **3.2.3**): y- prefix + tih- *to arrive*: nʌ tʸihu *he is arriving*; y- prefix +cima *calabash* > čima *his calabash*; y- prefix + sis *meat* > šis *his meat*; y- prefix + niwi *chile* > ñiwi *his chile*.

In formula: m, n, ŋ, r, l + ʔ > ʔm, ʔn, ʔŋ, ʔr, ʔl. Examples: kom *post* + -ʔaŋʌ suffix > koʔmaŋʌ *to the post*; pʌn *man* + -ʔis suffix > pʌʔnis *of the man*; kaŋ *jaguar* + -ʔis suffix > kaʔŋis *of the jaguar*; lugar *place* + -ʔoyh suffix > lugaʔroyh *at the place*; perol *copper kettle* + -ʔis suffix > peroʔlis *of the copper kettle.*

3.5. When certain non-alveolar consonants p, k, ʔ, h, y precede p, k, ʔ, h, y, respectively, the cluster is reduced to one consonant. Examples: nihp: *to plant* + -pa suffix: ñihpa *he plants it*; ʔuhk- *to drink* + -kuy suffix > ʔuhkuy *a drink*; caʔ *stone* + -ʔah- suffix: caʔahu *it became stone*; tuh- *to shoot* + -hay- suffix: tʸuhayu *he shot for him*; poy- *to run* + -yah- suffix: poyahu *they ran.*

3.6. When h precedes ʔ, the h is lost. In formula: h + ʔ > ʔ. Examples: ʔʌh *me* + -ʔaŋi suffix > ʔʌʔaŋi *near me*; mih *you* + -ʔohmo suffix > miʔohmo *among you*; yah- prefix + ʔotoŋ- *to speak*: yaʔ-otoŋu *he caused him to speak.*

3.7. Certain morphemes end in a cluster of h plus a consonant (formula hC) when in a position where hC is permitted. Consonants which occur after h in morpheme final position are stops p, t, k, c and sibilants s, š.

3.7.1. When a cluster of h + consonant becomes syllable final, the h is lost. Such a cluster (formula showing syllable division -h.C-) becomes syllable final in either of two positions: (1) word final (formula -h.C- + # > -C); (2) preceding another (syllable initial) consonant (formula -h.C- + C- > -C.C-).

(1) Examples of -h.C- + # > -C: cahp(-) > cap *sky* (cf. cahpohmo *in the sky*); peht(-) > pet *centipede* (cf. pehtewoʔ *centipede hole*); tʌhk(-) > tʌk *house* (cf. tʌhkis *of the house*); pahc(-) > pac *skunk* (cf. pahcis *of the skunk*); nahs(-) > nas *earth* (cf. nahsohmo *in the earth*); dyohs(-) > dyos *God* (cf. dyohsis *God's*).

(2) Examples of -h.C- + C- > -C.C-: nihp- *to plant* + -kuy suffix > nipkuy *planting*; kihp- *to fight* + -yah- suffix: kipyahu *they fought*; wiht- *to walk* + -pa suffix > witpa *he walks*; wiht- *to walk* + -tam- suffix: nwyittamu *you* (pl.) *walked*; cʌhk- *to do* + -pa suffix: čʌkpa *he does it*; cʌhk- *to do* + -yah- suffix: čʌkyahu *they did it*; cihc- *to tear* + -pa suffix > cicpa *it tears*; cihc- *to tear* + -keʔt- suffix: cickeʔtpa *it also tears*; sohs- *to cook* + -pa suffix > sospa *it cooks*; sohs- *to cook* + -keʔt- suffix: soskeʔtpa *it also cooks.*

When h precedes an alveolar consonant and the following consonant is y, the alveolar consonant is palatalized and the y is lost as in **3.1.** The -h.C- cluster remains ambisyllabic and h is not lost. Examples: wiht- *to walk* + -yah- suffix: wihtʸahu *they walked*; cihc- *to tear* + -yah- suffix: cihčahu *they tore*; sohs- *to cook* + -yah- suffix: šohšahu *they cooked it.*

When h precedes p, k and the following consonant is identical to it (p, k), the geminate cluster is reduced to one consonant as in **3.5.** The -h.C- cluster remains ambisyllabic and h is not lost. Examples: nihp- *to plant* + -pa suffix: ñihpa *he plants it*; cʌhk- *to do* + -keʔt- suffix: čʌhkeʔtu *he also did it.*

When -h.C- precedes ʔ in certain morpheme sequences (see **3.8**), the ʔ is lost. The -h.C- cluster remains ambisyllabic and h is not lost (see **3.8** for examples). But in certain other sequences the ʔ remains and the -h.C- cluster becomes syllable final and the h is lost. Examples: pakahk(-) *cold* + ʔaŋsʌŋ *season* > pakakʔaŋsʌŋ *winter*; kihp- *to fight* + ʔotoŋ- *to speak*: kipʔotoŋu *he argued.*

3.7.2. When a morpheme final cluster of h plus consonant precedes the morphophoneme X, the h is lost. In formula: -hC- + X- > -CX- (= -C-).[17] Examples: nihp-

[17] That is, morphemes which we set up as be-

to plant + -Xi suffix > nipi *planting*; puht *to go out* + -X^{a}/$_{A}$ suffix > putʌ *go out!*; cʌhk- *to do* + -X^{a}/$_{A}$ suffix > cʌkʌ *do it!*; suhc- *to lie* + -Xi suffix > suci *false*; sohs- *to cook* + -X^{a}/$_{A}$ suffix > sosa *cook it!*; napahš- (underlying form of napahšʌy- *to dream*) + -Xi suffix > napaši *dream*.

3.8.1. In certain morpheme sequences, when a cluster of h plus consonant precedes ʔ, the ʔ is lost. In formula: -hC- + ʔ- > -hC-. Examples: cʌhk- *to do* + -ʔaŋheh- suffix: čʌhkaŋhehu *he left off doing it*; paʔahk(-) *sweet* + -ʔah- suffix: paʔahkahu *it became sweet*.

For morpheme sequences in which a cluster of h plus consonant precedes ʔ and h (not ʔ) is lost, see **3.7.1.**

3.8.2. When certain other -CC- clusters precede ʔ, the ʔ is lost. In formula: -CC- + ʔ- > -CC-. Examples: teʔc- *to lean* + -ʔʌy- suffix: niteʔcʌyu *he bowed*; naks- *to hit* + -ʔaŋheh- suffix: ñaksaŋhehu *he left off hitting him*.

3.9. When a nasal m, n, ñ, ŋ (including M, N) precedes a voiceless stop p, t, t^{y}, č, k, the stop changes to the corresponding voiced stop b, d, d^{y}, ǰ, g. In formula: nasal + voiceless stop > voiced stop. Examples: nʌm- *to say* + -pa suffix > nʌmba *he says*; min- *to come* + -pa suffix > minba *he comes*; maŋ- *to go* + -pa suffix > maŋba *he goes*; min- *to come* + -tam- suffix: mindamʌ *come!* (pl.); ciŋ- *to bathe* + -tam- suffix: ciŋdamʌ *bathe!* (pl.); pʌn *man* + čʌki (~ cʌki) *figure* > pʌnǰʌki (~ pʌncʌki) *figure of a man*; pʌn *man* + -kʌsi suffix > pʌngʌsi *on a man*; ʔune *child* + -taʔm suffix > *ʔunytaʔm > *ʔunyt^{y}am > *ʔuñt^{y}aʔm[18] > ʔuñd^{y}aʔm *children*. Another example after ñ is šuhpuñbuñ *soapberry*, which contains a reduplicated form of a morpheme *-puñ.

3.10. Morphophonemes M and N are variously actualized in sequence with a following consonant.

3.10.1. When M or N precedes a stop p, b, t, d, c, t^{y}, d^{y}, č, k, g, the M, N is homorganic with the stop. (If the stop is voiceless, it becomes voiced as in **3.9.**) In formula: M, N + p, b > mb; M, N + t, d > nd; M, N + c > nc; M, N + t^{y}, d^{y} > ñd^{y}; M, N + č > ñǰ; M, N + k, g > ŋg.

Examples of N before stops consist of forms having the pronominal prefix N- or Ny-: N- prefix + pama *clothing* > mbama *my clothing*; N- prefix + plato *plate* > mblato *my plate*; N- prefix + bur·u *burro* > mbur·u *my burro*; N- prefix + tatah *father* > ndatah *my father*; N- prefix + trampa *trap* > ndrampa *my trap*; N- prefix + disko *phonograph record* > ndisko *your phonograph record*; N- prefix + cima *calabash* > ncima *my calabash*; Ny- prefix + tih- *to arrive*: ñd^{y}ihu[19] *you arrived*; Ny- prefix + duracʌhk- *to last*: ñd^{y}uracʌhku[20] *you lasted*; N- prefix + čoʔngoya *rabbit* > ñǰoʔngoya *my rabbit*; N- prefix + kayu *horse* > ŋgayu *my horse*; N- prefix + kwarto *room* > ŋgwarto *my room*; N- prefix + gayu *rooster* > ŋgayu *my rooster*.

Examples of M before stops consist of forms with one of the two suffixes -taM- and -aʔa ~ -aʔM-. Examples with -taM-: N- prefix + ken- *to see* + -taM- suffix + -keʔt- suffix: ŋgendaŋgeʔtu *you* (pl.) *also saw it*; N- prefix + ken- *to see* + -taM-

ginning with X 'act as if they began with a consonant.' We may further set up a morphophonemic (not phonemic) syllable division in which X (morpheme initial) is initial in the syllable. This makes the cluster -hC- morphophonemically syllable final, with consequent loss of the h as in **3.7.1.** To show the morphophonemic syllable division, the formula given would read: -h.C- + X- > -C.X- (= -.C- with phonemic syllable division).

[18] For explanation of the intermediate steps see **3.17.**

[19] t is palatalized to *t^{y} with loss of y by **3.2.4**; *t^{y} is voiced to d^{y} by **3.9.**

[20] d is palatalized to d^{y} with loss of y by **3.2.3.**

suffix + -tʌ?- suffix: ŋgendandʌ?u *you* (pl.) *intended to see it*; y- prefix + ?ʌŋ- *to sleep* + -taM- suffix + -tʸo?y- suffix: ?yʌŋdañdʸo?yu *you* (pl.) *were sleepy* (contrast -taM- suffix = -tam- before vowels: ŋgendamu *you* (pl.) *saw it*). Examples with -a?a ~ -a?M-: min- *to come* + -u suffix + -a?M- suffix + tʌh *we* > minwa?ndʌh *we already came* (contrast -a?M- suffix = -a?m- before vowels: minwa?mʌh *I already came*).

3.10.2. When N precedes ?, f, s, š, m, n, ñ, l, r·, the N is lost. Examples: N- prefix + ?ane *tortilla* > ?ane *my tortilla*; N- prefix + faha *belt* > faha *my belt*; N- prefix + sʌk *beans* > sʌk *my beans*; N- prefix + šapun *soap* > šapun *my soap*; N- prefix + mok *corn* > mok *my corn*; N- prefix + naka *skin* > naka *my skin*; Ny- prefix + nihp- *to plant*: nʌmih ñihpu *you are planting*; N- prefix + lawus *nail* > lawus *my nail*; N- prefix + r·ančo *ranch* > r·ančo *my ranch*.

3.10.3. When N precedes w, y, h, the N = n. Examples: N- prefix + waka *basket* > nwaka *my basket*; N- prefix + yomo *woman* > nyomo *my wife*; N- prefix + huki *cigarette* > nhuki *my cigarette*.

3.10.4. When M precedes w or a vowel, the M = m. Examples: ŋgendamwa?mis *you* (pl.) *already saw him* (-tam- = suffix -taM-); min- *to come* + -taM- suffix + -u suffix > mindamu *you* (pl.) *came*.

3.11. When the cluster ks or ?ks precedes c, the c is changed to č. In formula: ks + c > ksč. Examples: ne?ks- *to stick* + cʌ?y- *to stay*: ne?kscʌ?yu *it stayed stuck*; poks- *to sit* + cʌ?y- *to stay*: poksčʌ?yu *he remained seated*; nu?ks- *to borrow* + ci?- *to give*: ñu?ksči?u *he loaned it*.

3.12. When ŋ follows a vowel and precedes X, ŋ is replaced by w. In formula: Vŋ + X > VwX (= Vw). Examples: coŋ- *to meet* + -X$^{a}/_{ʌ}$ suffix > cowa *meet him!*; maŋ- *to go* + -X$^{a}/_{ʌ}$ suffix > mawʌ *go!*; ?ʌŋ- *to sleep* + -Xi suffix > ?ʌwi *sleep*; ?otoŋ- *to speak* + -Xe suffix > ?otowe *language*.

3.13. When h follows a vowel and precedes X, h is replaced by a semivowel y or w. In formula: Vh + X > VyX (= Vy) or VwX (= Vw).

3.13.1. When V = a, e, i, ʌ, then Vh + X > VyX (= Vy). Examples: tah- *to dig* + -X$^{a}/_{ʌ}$ suffix > tayʌ *dig!*; yah- *to end* + -X$^{i}/_{e}$ suffix: ?uy yaye *do not end it!*; weh- *to cry out* + -X$^{i}/_{e}$ suffix: ?uy weye *do not cry out!*; tih- *to arrive* + -X$^{i}/_{e}$ suffix: ?uy tiyi *do not arrive!*; meh- *to sharpen* + -X$^{a}/_{ʌ}$ suffix > meya *sharpen it!*; pʌh- *to blow into* + -X$^{a}/_{ʌ}$ suffix > pʌyʌ *blow into it!*

3.13.2. When V = u, then uh + X > uwX (= uw). Examples: tuh- *to shoot* + -X$^{a}/_{ʌ}$ suffix > tuwʌ *shoot!*; suh- *to blow* + -X$^{i}/_{e}$ suffix: ?uy suwi *do not blow!*

3.13.3. When V = o, the h is replaced by w in certain stems, by y in other stems.

Examples of oh + X > owX (= ow): toh- *to blister* + -X$^{i}/_{e}$ suffix: ?uy towe *do not get blistered!*; koyoh- *to pay* + -Xa suffix > koyowa *price*.

Example of oh + X > oyX (= oy): woh- *to make a hole* + -X$^{i}/_{e}$ suffix: ha?n wyoye *he does not make a hole*.

3.14. In certain suffixes beginning with the morphophoneme X, the vowel is determined by the vowel of the preceding syllable. There are two types of vowel harmony, indicated by the morphophonemic symbols $^{i}/_{e}$ and $^{a}/_{ʌ}$ respectively.

3.14.1. Certain suffixes beginning with X have a vowel i ~ e (designated $^{i}/_{e}$).

When the vowel of the preceding syllable is a high vowel (i, ʌ, u), $^{i}/_{e}$ = i. Examples: min- *to come* + -X$^{i}/_{e}$ suffix: ha?n mini *he does not come*; cʌhk- *to do* + -X$^{i}/_{e}$ suffix: ha?n čʌki *he does not do it*; sun- *to want* + -X$^{i}/_{e}$ suffix: ha?n šuni *he does not want it*.

When the vowel of the preceding syllable is a low or mid vowel (a, e, o), $^{i}/_{e}$ = e. Examples: cam- *to speak* + -X$^{i}/_{e}$ suffix: ha?n čame *he does not speak*; ken- *to see* + -X$^{i}/_{e}$ suffix: ha?n kyene *he does not see*; ?otoŋ- *to speak* + -X$^{i}/_{e}$ suffix: ha?n ?yotowe *he does not speak*.

3.14.2. Certain suffixes beginning with X have a vowel a ~ ʌ (designated $^{a}/_{ʌ}$).

When the vowel of the preceding syllable is a mid vowel (e, o), $^{a}/_{ʌ}$ = a. Examples: ken- *to see* + -X$^{a}/_{ʌ}$ suffix > kena *see!*; poy- *to run* + -X$^{a}/_{ʌ}$ suffix > poya *run!*

When the vowel of the preceding syllable is a low or high vowel (a, i, ʌ, u), $^{a}/_{ʌ}$ = ʌ. Examples: cahk- *to leave* + -X$^{a}/_{ʌ}$ suffix > cakʌ *leave it!*; ken- *to see* + -taM- suffix + -X$^{a}/_{ʌ}$ suffix > kendamʌ *see!* (pl.); min- *to come* + -X$^{a}/_{ʌ}$ suffix > minʌ *come!*; cʌhk- *to do* + -X$^{a}/_{ʌ}$ suffix > cʌkʌ *do it!*; tuh- *to shoot* + -X$^{a}/_{ʌ}$ suffix > tuwʌ *shoot it!*; puht- *to go out* + -X$^{a}/_{ʌ}$ suffix > putʌ *go out!*

3.15. In certain sequences,[21] when morpheme final V precedes morpheme initial ?V or ?Vh, a reduction occurs.

3.15.1. In certain of these sequences, the first vowel is lost and the ? undergoes metathesis with the second vowel. In formula: V_1 + ?V_2 > V_2?. Examples: ?ʌ?wʌ *that one* + -?aŋi suffix > ?ʌ?wa?ŋi *to that one*; minʌ *come!* + -?a? suffix > *mina?? > mina? (by **3.5**) *come now!*; hama *sun* + ?aŋsʌŋ *season* > hama?ŋsʌŋ *dry season*; tatah *father* + -?aŋʌ suffix > *tata?aŋʌ (by **3.6**) > tata?ŋʌ *to the father*.

In sequences of this type, if the second vowel precedes h, the reduction occurs as described and the h is lost. In formua: V_1 + ?V_2h > V_2?. Examples: ?upu *foam* + -?ah- suffix: ?upa?u *it foamed*; popo *white* + -?ah- suffix: popa?u *it became white*; moči *weak* + -?ah- suffix: moča?pa *he becomes weak*; caŋga *fat* + -?ah- suffix: caŋga?pa *he becomes fat*; ?aŋgʌ *patio* + -?ohmo suffix > ?aŋgo?mo *in the patio*; mʌ?nʌ *hilltop* + -?ohmo suffix > mʌ?no?mo *at the top*; ca?ma *bush* + -?ohmo suffix > ca?mo?mo *in the bush*.

The formulae for the two preceding paragraphs may be combined: V_1 + ?V_2(h) > V_2?.

In the sequences kama *cornfield* + -?ohmo suffix > ka?mo?mo *in the cornfield* and cima *calabash* + -?ohmo suffix > ci?mo?mo *in the calabash*, an additional ? is inserted which makes the last two syllables identical (-?mo?mo).[22]

3.15.2. In certain other sequences, the first vowel is consonantalized to w or y. The ? undergoes metathesis with the second vowel as in **3.15.1.** In formula: V_1 + ?V_2 > wV_2? or yV_2?.

When V_1 = u, then V_1 + ?V_2 > wV_2?. Examples: kenu *he looked* + -?a?a suffix > kenwa?a *he already looked*; minu *he came* + -?a?a suffix > minwa?a *he already came*; čʌhku *he did it* + -?a?a suffix > čʌkwa?a *he already did it*.

When V_1 = i, e, a, then V_1 + ?V_2 > yV_2?. Examples: homi *tomorrow* + -?aŋge

[21] In some morpheme sequences, V + ?V(h) always undergoes reduction; in some sequences the reduction is optional (e.g. popo?ahu ~ popa?u *it became white*; cima?ohmo ~ ci?mo?mo *in the calabash*; homi?aŋge ~ homya?ŋge *good bye*). In some morpheme sequences, V + ?V(h) = V?V(h); i.e. no reduction takes place. The occurrence of reduction is arbitrary as regards phonemic shape of sequences which are or are not reduced. But there is apparently a correlation with statistical frequency; forms showing reduction tend to be those occurring most frequently.

[22] Note the possibility that ka?mo?mo *in the cornfield* gets its additional ? by contamination with ca?mo?mo *in the bush*, where the first ? is part of the stem. Although different in meaning, ka?mo?mo and ca?mo?mo are similar enough in cultural context to make such a contamination quite conceivable. The first ? in ci?mo?mo *in the calabash* would then appear by analogy with ka?mo?mo. But see footnote on **3.18.**

suffix > homya?ŋge *good bye* (= Spanish 'hasta mañana'); no?ce *wall* + -?aŋi suffix > *no?cya?ŋi > no?čaŋi (by **3.1**) *near the wall.*

In sequences of this type, if the second vowel precedes h, the reduction occurs as described and the h is lost. In formula: V_1 + ?V_2h > yV_2?. Examples: kʌpi *firewood* + -?ah- suffix: kʌpya?u *he gathered wood*; kowi *ear* + -?ohmo suffix > kowyo?mo *in the ear*; no?ce *wall* + -?ohmo suffix > *no?cyo?mo > no?čo?mo (by **3.1**) *in the wall*; ha?ci *debt* + -?ohmo suffix > *ha?cyo?mo > ha?čo?mo (by **3.1**) *in debt*; puci *trash* + -?ohmo suffix > *pucyo?mo > pučo?mo (by **3.1**) *in the trash*; mucih *grass* + -?ohmo suffix > *muci?ohmo > *mucyo?mo > mučo?mo (by **3.1**) *in the grass*; ?aksah *sugar cane* + -?ohmo suffix > *?aksa?ohmo (by **3.6**) > *?aksyo?mo > ?akšo?mo (by **3.1**) *in the canefield*; no?se *nest* + -?ohmo suffix > *no?syo?mo > no?šo?mo (by **3.1**) *in the nest*; mote *mud* + -?ohmo suffix > *motyo?mo > mot^{y}o?mo (by **3.1**) *in the mud*; ?une *child* + -?ah- suffix > *?unya?- > ?uña?- (by **3.1**) *to give birth* (?uña?u *she gave birth*).

The formulae for the two preceding paragraphs may be combined: V_1 + ?V_2(h) > yV_2?.

3.16. Loss of one of two identical V? sequences. One example has been recorded in which V_1?V_1 + ?V_2 > V_1?V_2: pa?a *wild* + ?oci *tobacco* > pa?oci *wild tobacco.*

3.17. In certain sequences, when morpheme final e follows n and precedes morpheme initial t, the combination ne + t > ñd^y. Examples: ?ane *tortilla* + tahk- *to weave* > ?añd^{y}ahk- *to make tortillas*; ?une *child* + tuku *worthless* > ?uñd^{y}uku term of reproof to children; ?une *child* + -ta?m suffix > ?uñd^{y}a?m *children* (the more frequent form ?uneta?m exists alongside the modified one).

3.18. In at least one example, two near-identical sequences of phonemes become identical: tumʌ *one* + tumin *money* or *real* (*12½ centavos*) > tumitumin *one real.*[23]

[23] Cf. ka?mo?mo *in the cornfield* and ci?mo?mo *in the calabash* (**3.15.1** and footnote). Here also two near-identical sequences of phonemes become identical. Both these and tumitumin *one real* may possibly be correlated with a tendency toward reduplication in the language; cf. examples in **7.1.2** and elsewhere.

REVIEWS

PAPERS AND MONOGRAPHS ON NAVAHO LANGUAGE AND CULTURE, by Father Berard Haile, O.F.M. A General Review.

The recent publication of Father Berard's Ghostway Ritual and Suckingway (see no. 20, below) gives occasion for a general review of his work and that of the Franciscan Fathers on the language and culture of the Navaho Indians. A complete list of these papers and monographs, including (no. 21) a great many as yet unpublished, follows:

By the Franciscan Fathers:

1. An Ethnologic Dictionary of the Navaho Language. St. Michaels, Arizona, 1910. 536 pages.
2. A Vocabulary of the Navaho Language. 2 volumes. St. Michaels, Arizona, 1912.

By Father Berard Haile:

3. The Meaning of "Tusayan," a Note on Navaho Migrations and Pueblo Names. AA 19.151, 1917.
4. Some Mortuary Customs of the Navajo. The Franciscan Missions of the Southwest, no. 5. 29–33, 1917.
5. A Manual of Navaho Grammar. St. Michaels, Arizona, 1926. 324 pages.
6. Navaho Verbal Stems. ICA (Abstracts) 28.21, 1928.
7. Navaho Games of Chance and Taboo. Primitive Man 6.35–40, 1933.
8. Religious Concepts of the Navajo Indians. Proceedings, American Catholic Philosophical Association 10.84–98, 1935.
9. Navaho Chantways and Ceremonials. AA 40.639–652, 1938.
10. Origin Legend of the Navaho Enemy Way, Text and Translation. Yale University Publications in Anthropology 17, 1938. 320 pages.
11. A Note on the Navaho Visionary. AA 42.439, 1940.
12. Learning Navaho. 4 volumes. St. Michaels, Arizona, 1941 48. 184 + 224 + 166 + 296 pages.
13. Origin Legend of Navaho Flintway. University of Chicago, 1943. 319 pages.
14. The Navaho Fire (or Corral) Dance. St. Michaels, Arizona, 1946. 57 pages.
15. The Navaho War Dance. St. Michaels, Arizona, 1946. 50 pages.
16. Head and Face Masks in Navaho Ceremonialism. St. Michaels, Arizona, 1947. 122 pages.
17. Navaho Sacrificial Figurines. University of Chicago, 1947. 100 pages.
18. Prayer Stick Cutting in Shootingway. University of Chicago, 1947. 229 pages.
19. Starlore among the Navaho. St. Michaels, Arizona, 1947. 44 pages.
20. Ghostway Ritual and Shootingway. St. Michaels, Arizona, 1950. 374 pages.
21. Texts of various ceremonies and folktales. On deposit at the Department of Anthropology, University of Chicago. Approx. 2200 mss. pages.

Father Berard began his missionary labors at St. Michaels in 1900. Despite a heavy load of parochial and teaching duties, he and his colleagues learned a great deal of the Navaho, a knowledge which gradually began to take form in the considerable body of published and unpublished material listed above. Father Berard took the lead in this important work and early became our best informed student of Navaho language and religion. All who have since worked with the Navaho owe a great deal to his writings and for many, as for the author of this review, Father Berard's characteristic kindness and willing assistance immeasurably eased the problem of beginning field work in the difficult and complicated area of Navaho language and culture.

The writings listed above fall into four principal groups: (1) grammatical studies of the Navaho language, (nos. 5, 6, 12), (2) lexical studies (nos. 1, 2), (3) texts, especially of important Navaho ceremonies (nos. 10, 13, 20, 21), and (4) miscellaneous ethnological writings, most of which concern Navaho religion (nos. 3, 4, 7–9, 11, 14–19). It may be noted, however, that the division between linguistic and non-linguistic cultural studies is never sharp. From the beginning, the Franciscans have emphasized the fact that Navaho religious culture is best studied in terms of the native language and that a true understanding of Navaho culture is best achieved through a careful analysis of its own linguistic framework. In his years among the Navaho,

Father Berard has not been content to remain a non-participant scholar, but is one of the few students of the American Indian who has acquired a fluent command of the language of the people he is studying.

The earliest and still one of the best studies produced by the Franciscans is the Ethnologic Dictionary (no. 1). Kluckhohn in 1940 (A Bibliography of the Navaho Indian, p. 37) calls it the "most valuable general collection of material on the Navaho to date" and Edward Sapir once wrote:

The Dictionary is an admirable work both for the linguist and for the ethnologist and is unique in many respects. It forms the best introduction to the culture of the Navaho Indians that we possess and has the peculiar advantage of introducing the reader to the world of the Navaho through the concept of the Indian himself. It is a richly informative book and it is intimate without being conventionally sentimental. (Navahoana, A Descriptive List of Publications on the Navaho Indians, St. Michaels Press, 1950, p. 4.)

More than any other work, the Dictionary illustrates the technique of combining ethnologic and linguistic data to the mutual clarification of both. Each entry describes a particular phase of Navaho culture and lists, with precise definitions, a sampling of the words and phrases pertinent to the culture patterns concerned. By this means, the reader gains an insight into cultural patterns which approaches that given in native texts. Though now out-dated, and supplanted in many respects by later works, the Dictionary remains a valuable report, especially for the older aspects of Navaho culture.

The earlier linguistic works (nos. 2, 5) are amateurish in methodology and technique; the phonetic writing is cumbersome and unsystematized, having been devised by men untrained in phonemic analysis, and the grammatical statements, in many instances, incomplete and open to question. In 1929, Father Berard joined Edward Sapir on a field trip to the Navaho conducted by the Laboratory of Anthropology at Santa Fe. There he learned Sapir's methods and applied these to his own rich knowledge of spoken Navaho. The result of this training is apparent in Learning Navaho (no. 12). In this four volume work, Father Berard gradually introduces the student to the considerable complexities of Navaho grammar and lexicon, combining meticulous accuracy in phonetic recording with a wealth of detail on usage and meaning. In the hands of a capable teacher, Learning Navaho is a sound introduction to Navaho language. It also explains much of Navaho non-linguistic culture, quite as important to one who would live with the Navaho as fluency in pronunciation and grammar.

To the linguist, however, Father Berard's linguistic writings are better teaching aids than contributions to structural linguistics. His recording, its precision notwithstanding, is largely impressionistic, not phonemic, even though the notation he uses has been vastly improved over the earlier works. In grammar, Learning Navaho is more useful for the masses of data it supplies than for a careful systematization of linguistic patterns. These faults derive, of course, from the same factor that makes Learning Navaho so good a teaching grammar: Father Berard's concentration on one language. Precision and skill in descriptive methodology requires experience with many diverse linguistic structures.

Father Berard's most important contributions to linguistics and ethnology are unquestionably to be found in his Navaho texts (nos. 10, 13, 20, 21) and in his briefer articles and monographs on Navaho ritual and religion (nos. 8, 9, 11, 14–19). To the linguist, the texts supply an almost inexhaustible mine of lexical and grammatical data, particularly useful because Father Berard's practical command of the language enables him to record accurately at normal speeds of articulation. Kluckhohn (Op. cit. p. 34) characterizes the Origin Legend of the Enemy Way (no. 10) as "the most extensive published Navaho

text" and adds that it is "scrupulously recorded with a wealth of linguistic commentary." The remaining text collections are equally good, thus providing a total of 1013 printed pages of native Navaho material, English translation, and annotation. To this should be added the 2200 plus pages of lexical data as yet unpublished. It is probably no exaggeration to say that Father Berard's published and unpublished texts compose one of the largest collections of religious and linguistic data available for any American Indian tribe.

One linguist, not an Americanist, has suggested that the neatness and finality of many phonemic descriptions of American Indian languages is more apparent than real, and that if we had had as much data for these as we have, for example, for English, our phonemic statements would be far less conclusive and more difficult of formulation. This is very possibly true, even if we allow for the fact that English, with millions of speakers, offers a descriptive problem much more complicated than Navaho, with only 60,000 speakers. The difficulty to date has been that most Americanists, having to record painstakingly their own texts, have not had the opportunity to spend the long time in the field necessary to provide the large amounts of data necessary to the solution of this problem.

It is in this respect that Father Berard's material may possibly provide a significant contribution to the problem of describing Navaho adequately. Sapir's data, though not inconsiderable, is far less extensive, particularly in recorded texts, and it is on this material that most published analyses have been based. Even a casual reading of Father Berard's texts provides a good deal of information not hitherto available and suggests that many analyses now acceptable may have to undergo considerable revision. It is still true, as Boas pointed out in his Introductory to this journal (IJAL 1.1, 1917), that "large masses of texts are needed in order to elucidate the structure of the [American Indian] languages." Father Berard, in supplying this need for Navaho, has made a contribution to Navaho linguistic studies which is all the more valuable for the fact that few others have had his opportunities to live so long with the Navaho and to learn their culture so well.

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MORPHOLOGY, THE DESCRIPTIVE ANALYSIS OF WORDS. By Eugene A. Nida. Second and completely new edition, based on actual-language materials. Ann Arbor, University of Michigan press, 1949. xvi, 342 pp. (University of Michigan Publications, Linguistics, volume II.) $2.50 (cloth, $3.50).

When the preliminary (mimeographed) edition of Nida's Morphology appeared in 1944, I reviewed it at length and enthusiastically (*SIL* 2.73–7 [1943–4]). After the appearance of the first edition in the Michigan series, in 1946, I used the book as a text in a graduate course devoted to morphological analysis that I taught at the University of Oklahoma in 1946–7; this experience tempered my enthusiasm as I discovered many theoretical lacunae and faults. Now we have a revised edition, with many changes, and considerable theoretical rearrangement.

The use of artificial language problems once seemed to me to be an excellent idea. Practice has shown that there are serious difficulties in this procedure, and Nida is well-advised to have substituted problems based on real languages (Preface, v). Theory is specifically stated to be at a minimum (vi), because of the textbook nature of the book. This might serve as an excuse not to review the work in a scientific journal; but linguistics is still too concerned with developing its theory for there to be a solid and completely accepted body of knowledge that can be laid down as the basis of a teaching text. So, though Nida does not examine other theories than his own, the critical user must make these comparisons. In fact,

even beginning students ought to get some contrasting opinions. Nida's phonemic transcription of English is on the whole satisfactory (see further below), though his claim as to the simplicity of his own dialect (vi) is not valid in the way he intends it to be. In this case, as well as for other languages, I must strongly disagree that "phonemic inadequacies do not materially affect the description of morphological structures" (vi); it is quite true that much morphological analysis can be done on an inadequate phonemic basis, or even in the absence of one (one could write a kind of morphology of literary English without ever knowing anything about the pronunciation of the units separated by spaces on the printed page), but large parts of any morphological structure depend on accurate phonemic statements. As a theoretical basis, one must insist that as much phonology as possible be done before morphology is begun.

The chapter headings are: 1. Introduction to morphology (1), 2. The identification of morphemes (6), 3. Types of morphemes (62), 4. The distribution of morphemes (78), 5. Structural classes (107), 6. The meaning of morphemes and sequences of morphemes (151), 7. Field procedures (175), 8. Analytical procedures (192), 9. The descriptive statement of morphology (222), Appendix (283), Bibliography (335), Index (339).

Chapter 1 begins: "Morphology is the study of morphemes and their arrangements in forming words. Morphemes are the minimal meaningful units which may constitute words or parts of words." At this late date the definition in the second sentence simply will not do, and the first sentence cannot be justified by the footnote that tells us that "word" is being used in the usual traditional sense. There is no usual sense that can serve any valid function in a scientific discussion. And no linguist can determine what is "meaningful" except subjectively. It is time that we discussed MORPHEMICS—morpheme analysis—rather than morphology, as our basic analytical procedure after phonology. Morphemics would be the study of the shapes or forms (MORPHOPHONEMICS) and occurrences (ARRANGEMENT or tactics) of morphemes. In some, but not all, languages, there could well be introduced a subdivision of arrangement into MORPHOLOGY—the formation of words from morphemes, and SYNTAX—the formation of constructions from words. The basic problems that Nida concerns himself with, such as the identification of morphemes, are problems of morphemics as a whole; after they are treated, it is legitimate to go on to examine word-forming—i.e., morphological—techniques in various languages, leaving syntax to a special study.

As for morphemes themselves, let us leave meaning out of the discussion. Morphemes are recurring partials of structure, identifiable by distribution and correlation in patterned arrangements. It will be time enough to worry about meaning when we have worked out all our morphemic (morphological and syntactic) analyses.

That old friend among examples, *the king of England's hat*, reappears for a moment in some preliminary remarks on what is a word (3). In English a (morphemic) word is defined by me as a complex consisting of one base-morpheme, with or without one or more suffixes, and with a superfix morpheme (a stress-pattern). All complexes with more than one base are (morphemic) phrases, by definition. Accordingly, *the king of England's* (*hat*) is a phrase, and the morpheme represented by *-'s* is seen to be an element that can be attached to nominal phrases as well as to nouns; this type of arrangement is in the realm of syntax, and can profitably be studied only when morphology has been clearly delimited and exhaustively analyzed.

As a whole, chapter 1 sets forth clearly what the subject of the book will be. The theoretical objections I have already made run through the whole of the work, of course,

but I shall not reiterate them except in terms of specific points of discussion.

In chapter 2 Bloomfield's definition of a morpheme as "a linguistic form which bears no partial phonetic semantic resemblance to another form" is given, with a confusingly worded commentary (7) which doesn't help matters. In any case, there follow "Principles employed in the identification of morphemes". These are six in number; the first four are identical with those already given by Nida in Lg. 24.414 ff. (1948), while the other two are statements of material treated under several subdivisions in that article.

The determination of a "common semantic distinctiveness" (principle 1) is the great stumbling block in all of this discussion. Nida cites the *-er* of comparatives and of agent nouns as an instance of two morphemes identical in form but distinguished on the basis of meaning. But it is by distributional facts that these two morphemes are distinguished. If by *meaning* Nida wants to refer to such distribution patterns, well and good; but he will then have to discuss them at much greater length. In fact, however, he uses *meaning* pretty much in its popular sense; this simply will not do as a scientific criterion. The further example of the difficulty of defining the various meanings of *-ish* in *boyish*, *mannish*, *bookish* and so on, is really not at all pertinent; the linguistic—structural—meaning of *-ish* is the fact that it occurs as a suffix with the bases *boy*, *man*, *book*, etc. (exhaustively listed).

The problems and examples illustrating the first principle (8–15) are good, and can still be used when "meaning" is eliminated from consideration. In fact, Nida points out in a footnote (note 7, p. 13) that it is impossible to define the meaning on the basis of the limited data given. In short, the meanings are convenient labels and no essential part of the analysis.

Principle 2 (14 ff.) deals with the identification of allomorphs, both those phonemically similar and those differing greatly on phonemic make-up, but which are phonologically conditioned. The English illustrations are transcribed without stresses or junctures, but generally this makes no difference for the points being discussed; however, the explicit instruction to omit consideration of stress in problem 22 (30) certainly obscures some of the relationships involved. The term "toneme" is used on 24 ff. If tone-phenomena are phonemes, why use a separate term? If one uses "toneme", why not also "vocaleme", "consonanteme", "stresseme" and what have you?! In part of his discussion and illustration of principle 2, Nida is dangerously near mixing historical and descriptive techniques: he suggests, in an example from Greek, that one can "reconstruct the forms as they might have existed before the presumed changes took place" (27). But when one analyzes the nominative φλέψ as morphemically √phléb-s, one is not "reconstructing" anything or speculating as to any historical developments; one is simply stating that the stem √phleb- combines with a suffix √-s; the phonemic result /ps/ is taken care of by the statements already made in the phonology as to possible final clusters and in the morphophonemics as to what happens when such and such consonants come together.

Principle 3 (41 ff.) deals with allomorphs that are not automatically phonologically conditioned. Zero allomorphs are also included. Footnote 44 (p. 46) says that one can consider English singulars as having zero; this is a serious error. No morpheme can consist of zero only; there are no English singular noun-endings as such, so there cannot be a singular morpheme. The plural zero (as in *sheep*) is established because elsewhere in the pattern there are phonemically positive pluralizing entities.

Principle 5 (54) leads Nida to the conclusion that English *feet* consists of the base, the replacement of /u/ by /iy/, and a zero suffix. This seems wasteful. There are

certain English nouns—which can be exhaustively listed—that have internal change as the manifestation of pluralization: one allomorph of the pluralizing morpheme, properly described, is sufficient; and having both the change AND zero is unnecessary. The formula for *feet* is: √fut-& √-Z¹ & √ˊ → √̋fíyt, to be read: "the morpheme fut- combined with the morpheme -Z¹ [the plural morpheme] combined with the morpheme [superfix]ˊ[word stress on a single syllable] results in the word fíyt". I am not here criticizing Nida, of course, for not dealing with superfixes, as this term was first presented by me in my and Henry Lee Smith, Jr.'s Outline of English Structure (Foreign Service Institute, Department of State, 1949–50). The allomorph of √-Z¹ in this instance can be described as "replacement of /u/ of the base by /iy/, with no suffix". This treatment does away with the need of creating such monstrosities as a 'discontinuous allomorph /f . . . t/' (68), which would also imply that the /u/ of /fut/ was an allomorph of something.

Principle 5 deals with homonymous morphemes, and here we really get into trouble. Nida's difficulties in trying to deal with the problem on the basis of subjective reaction to meaning differences show clearly that this is no basis for scientific analysis. Bolinger (*SIL* 8.29–39 (1950): "Complementation should complement") showed up the difficulties, but did nothing, in my opinion, to resolve them.

Principle 6, dealing with the conditions under which a morpheme is "isolatable", implies all the problems connected with juncture, stress, and intonation, and similar phenomena. In English one must not only include juncture and stress phonemes in one's phonology, but one must recognize the existence of superfixes (patterns of stresses, with or without plus-juncture) and of intonations (patterns of pitches, with one of the three terminal junctures) as morphemes before one can possibly resolve the problems of isolatability. In chapter 3 Nida specifically talks about suprasegmental morphemes, but it would have been much better to tie up his examples with his sixth principle right away.

In Problem 60 (75) we have a presentation of the adjective morphology of French, in terms of the now well-known putting the feminine forms first. The phonemic analysis is, in my opinion, incorrect, and the reference in footnote 15 to the suggestion of Wonderly that the feminine be treated as ending in /ə/ is mistaken in its conclusions that such a treatment would be complex. The /ə/ is not only a phoneme, but is also a feminine suffix √-ə; setting up stems in such forms as √movɛ·z-, √grand-, etc., leads to very simple morphophonemic statements about the endingless masculines.

On 76 the remarks about /miyčuw/ from /miyt yuw/, and similar forms, show a gap in the methodology. These cannot be handled until one clearly defines words on a morphological level; then, on the syntactic level, one can speak of the allologs and portmanteaus of words; that is, /míycuw/ or /míycə/ are portmanteaus of the words /míyt/ and /yúw/, /míyt + yə/ involves an allolog of /yúw/—the form /yə/, and so on.

In chapter 4 there is discussion (83 ff.) of juncture. Nida is confusing the phonemic phenomenon of internal open juncture (/+/) with morpheme joining points. The two have no necessary connection. In *nitrate* there is phonemically only normal transition (formerly called by me "close juncture"—but this is not a phoneme): /náytrèyt/; morphemically there are the base √nayt(ə)r-, the suffix √-eyt, and the superfix √ˊˋ. In *nightrate* we have phonemically /náyt+rèyt/; morphemically there are √nayt- and √reyt- (both bases) and the superfix √ˊ+ˋ; this is a phrase, on the syntactic level, not a word. For *Plato* some pronounce /pléytòw/, others /pléy+tòw/; there is still one base, √pleytow-, but some speakers use one superfix—√ˆ, others

another—√'+`. Unless one keeps clearly apart the phonemic and morphemic levels, and within the latter the morphological and syntactic, one cannot deal with immediate constituents and the related problems that Nida takes up in this chapter.

On p. 88 Nida discusses "A. Combinations of two immediate constituents: 1. Continuous nuclear and peripheral immediate constituents: a. With all successive peripheral constituents on one side of the nucleus." For an example of "two peripheral constituents' combining "to form a unit", he cites some forms from my Outline of Taos grammar, p. 206 (VFPA6, 1946). The material cited does constitute an example of complex morpheme combinations forming a kind of translation unit, but Nida's analysis is quite incorrect. I do not want to give the impression that Nida's examples are not accurate, but the error here must be corrected.

Nida cites forms with the prefixes 'ąn- *my*, ką- *your* (sg. possessor), kąn- *of us two*; then he analyzes kąn- as a combination of the first and second persons singular. However attractive such a speculative analysis might seem, it doesn't happen to be true. The full set of prefixes is given on the page cited, and an analysis of the constituent elements is easily made. In a forthcoming article on Taos morphology I propose to make the analysis in full; here I can deal only with part of it. The prefixes for possessors, if the noun is Sg. of genders I or III are: Sg 1 'ąn-, 2 ką-, 3 'ą-, Du 1 kąn-, 2 mąn-, 3 'ąn-, Pl 1 ki-, 2 mą-, 3 'i-. These we analyze thus (read $\sqrt[s]{}$ as 'allomorph'):

morpheme of person of possessor
—1st: $\sqrt[s]{}$'- ~ $\sqrt[s]{}$k-;
—2d: $\sqrt[s]{}$k- ~ $\sqrt[s]{}$m-;
—3d: √'-.

Where there are two allomorphs, the first is for Sg possessor, the second for dual or plural. Continuing, we have:

morpheme of number of possessor
—Sg: -ąn- ~ -ą-;
—Du: -ąn-;
—Pl: -i- ~ -ą-.

The Sg -ąn- appears with 1st person morpheme, while -ą- is found with 2d and 3d; the Pl -i- appears with 1st and 3d, while -ą- is found with 2d. When one goes to the set of prefixes for nouns of gender II in the Sg or gender I in the Pl, one finds Sg 1 'ąnąm-, 2 kąm-, 3 'ąm-, Du 1 kąnąm-, 2 mąnąm-, 3 'ąnąm-, Pl 1 kim-, 2 mąn-, 3 'im-. From this it is seen that the Sg allomorph -ąn- and the Du morpheme -ąn- are really -ąną- (the loss of the vowel /ą/ after /n/ being a frequent phenomenon in Taos, under statable conditions); and there is another element present, -m- (actually -mą- from other evidence); this -m(ą)- is the morpheme for gender II Sg or I Pl. Prefixes for nouns of gender II or III Pl are like those just discussed except that they have a final -w-: 'ąnąw-, kąw-, 'ąw-, kąnąw-, mąnąw-, 'ąnąw-, kiw-, mąw-, 'iw-; this -w- is the morpheme for gender II or III Pl. From the evidence here one would simply say that gender I or III Sg has no morpheme; other material in the language, however, shows allomorphs for gender I or III Sg, so that we set up a zero allomorph here: $\sqrt[s]{\phi}$. The gender elements appear next to the stem, in position "minus 1"; number elements are in "minus 2", person elements in "minus 3". There is not even any fusion here, every element being distinct and identifiable. This extensive presentation of a minor point is made because I believe it illustrates very well the dangers of "meaning morphology". In my analysis meaning is used only as a label to guide the analyst in his search for DISTRIBUTIONS; it is not permitted to lead him astray.

Chapters 5 and 6 provide many examples of analyses, and much matter for discussion. I shall not take them up, however, because I believe that the detailed remarks made so far indicate the kind of further criticism I would make.

Chapters 7, 8 and 9 contain very useful practical data of all kinds, appropriate to a textbook. The appendix presents some sup-

plementary problems, a table of phonetic symbols, and a phonemic writing of English. The latter shows important omissions, due to Nida's continued belief that he speaks "a comparatively simple variety of Western American"; this mythical simple dialect does not exist. Like all Americans I have ever heard, Nida must distinguish *just* (adv.) from *just* (adj.) at least part of the time by using /i/ in the former; his nucleus of *bought* is not the first element of the nuclei of *boat* and *coy*, but is either /ɔ/ or /ɔh/. Nida gives only two stresses—"primary" and 'secondary"; but his "secondary" must include secondary and tertiary, and weak stress is a phoneme; he could not say *elevator-operator* or *light-house keeper* as a native speaker if he didn't have four stresses. For details I can only refer again to the Outline of English Structure, an expanded and revised version of which is now in preparation.

In conclusion, Nida's Morphology is a useful and usable book, but it must be employed with caution and much guidance of the student to prevent serious misconceptions and erroneous analyses. I would not myself now give it to a beginning student of linguistics; but advanced students might well read it and analyze it critically. In a way, this book marks a terminus ad quem: linguistics based on meaning has done all it can, and here is an example of what it can do. We must now go on, for progress is an imperative in our culture, and science is part of our cultural activity.

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AN ANALYTICAL DICTIONARY OF THE TONKAWA LANGUAGE. By Harry Hoijer. University of California Publications in Linguistics, Vol. 5, No. 1, pp. 1–74 (University of California Press, Berkeley and Los Angeles, 1949).

There is a certain distressing circularity involved in writing reviews of first class works.[1] The reviewers can do little more than point out specific instances in which the author's performance is a true continuation of the pattern of work achieved in a particular field at a particular time. Often reviewers try to do much more than this—to say, for example, that an author's performance has served or will serve to change ('to advance') the standard pattern of a particular field. As an unsupported statement in a review, this kind of 'critical' talk is properly classified as a not unpleasant enthusiasm which is received in the learned world with the same equanimity accorded, in the theatrical world, to the *super* and the *terrific!*

Hoijer's Tonkawa Dictionary is first class. If we wish to say anything more than this, we have to show the kind of work which has recently been done in making contributions to the lexicon of specific American Indian languages. These include (1) Sapir's Southern Paiute, published in 1931, (2) Li's Chipewyan Stems (1933), (3) Voegelin's Shawnee Stems and the Jacob P. Dunn Miami Dictionary (1938), (4) Hoijer's Tonkawa (1949).

To the culturalist who is a non-linguist, Sapir's Southern Paiute Dictionary, with its variety of small type (and its solid, run in lines of forms) is at first glance a mysterious and forbidding looking work. A determined person, however, discovers that stems or 'main entries' (e.g., WATER, SPRING) are listed (unnumbered) in roman caps at the top left of paragraphs; under these are short or long paragraphs of 'subentries' or derivative forms (e.g., WATER SPLASHER, SWALLOW). Occasionally, the use of these derivative forms in texts is indicated

[1] If a work is not first class, then it is possible to give chapter and verse showing in what respect the author has fallen to a B performance or a C performance, or worse—though the scientific importance of such critical demonstrations has always impressed us as dubious. (Perhaps the editor of the *Southwestern Journal of Anthropology* shares this doubt; at any rate, SWJA runs no reviews at all.)

by giving page and line in which they occur; just why some forms are attested thus, and as many others left unattested, is not explicitly stated. (Probably the forms not attributed to texts were directly elicited from informants.) But this is not too important; what one would like to find generally is the constituents of the compounds. Looking for these constituents, one sometimes feels as though one were searching for a needle in a haystack. (The magic formula for finding the needle = all the morphophonemic rules of Southern Paiute.)

The Chipewyan stem list comprises, one is told, nothing less than the lexical elements in Chipewyan—both of major morpheme classes (stems) and of minor morpheme classes (affixes). There is little the non-linguist can do with these morphemes as such. To the linguist, however, no score of music looks more pleasant than a really sophisticated morpheme list like Fang-Kuei Li's. The late Leonard Bloomfield frequently remarked in admiration and pleasure over this specific work. It is probably no exaggeration to say that no single genre of linguistic literature is more useful than a morpheme list.[2]

The third work, Shawnee Stems, is one which, for cultural uses, has one serious fault: far too few stems are treated. The lengthy Index in English to this Dictionary, a useful feature (which none of the other dictionaries considered possess) is still misleading; the majority of English entries are to the Dunn Miami material, not to the Shawnee material. However, the meanings of Shawnee morphemes are stated so originally, that a culturalist cannot afford to pass this material by casually; as a specific attempt to deal with the problem of translation, it affords valuable semantic insights.

Hoijer's Tonkawa dictionary has for the culturalist two remarkable virtues; clarity and fullness. This dictionary gives, in alphabetical and numbered sequence, themes from 1 to 907 and affixes from 908 to 1015. In addition, some 2000 derived or compound forms, each having its indented subnumber or double-indented letter, are also given. Each entry, whether it be theme or compound or derived form, has its own number for purposes of cross reference; every entry, moreover, is on a separate line of its own and can therefore be quickly referred to.

Besides having, as American Indian dictionaries go, a relatively large number of entries, the material in the Tonkawa dictionary is so presented that compound and derived Tonkawa words can be quickly analyzed by the non-linguist who, if he wishes to, can arrive at a completely literal translation—more literal, in fact, than those Hoijer himself occasionally offers after his glosses. Such analysis is made possible by number cross-references to themes and affixes that appear in compounds or derived forms. The following example from the Dictionary illustrates Hoijer's method of numbering entries, of cross-referencing, and also of documenting his material. All bracketed explanations in this example are ours:—

388. ke·sxaya- (xa·-) evening falls, to become evening. T. 1.3. 4.5. 18.2, 13, 17. 19.21. 20.5. 23.1 [= form occurs in Text 1, paragraph 3, Text 4, paragraph 5, etc., of Hoijer's forthcoming Tonkawa Texts].

1. ke·sxa·n, ke·sxayan evening; west. V. 911 [= vide entry 911. -an noun-forming suffix. G75. (G75 is a reference to a numbered section in Hoijer's Tonkawa Grammar, in which the noun-forming suffix -an is discussed)].

a. tawcew- ke·sxayan evening star. V.151 [= vide entry 151. tawsew star].

With such a system of cross-references, questions which interest the culturalist can readily be investigated without first mastering the linguistic detail. Some of these questions might be: do the Tonkawa

[2] See now the use to which Li's list is put in a paper in the present issue of IJAL entitled: A Query on the Nominal Origin of Verb Stems in Athapaskan.

have names for post Columbian cultural items, such as *automobile, horse, cat, sheep, potatoes*, etc., and if they do, what kind of names do they use for them?

Hoijer presents 63 pages of Tonkawa themes and derived and compound forms. Forty names for non-aboriginal plants, animals, and cultural items occur in the first 10 of these 63 pages. If this is a fair sample, in some 2800 Tonkawa themes and compounds there occur about 250 names for introduced objects.

With the corpus of material which Hoijer furnishes in his dictionary, we are now in a position to make certain statements as to the kind of names the Tonkawa give to introduced objects. Again, using as a sample the 40 words for introduced items to be found in the first 10 pages of the 63 page section on themes, it becomes apparent that derived forms and descriptive noun compounds, are, in the majority of cases, used as names for new objects. Examples of such are:

1.10.a. it by self goes away-er (that which runs by itself, automobile)
7.3.b. cow male (bull)
7.3.d. chicken or turkey male (rooster)
30.13. water foaming (beer)
30.14. water red (wine)
30.15. sweet water (syrup)
33.5. work no (Sunday)
44.1. dog fearsome (lion)
44.3. dog slim (greyhound)
70.81 hair curly (sheep)
70.11. person hair there is (person having hair, monkey)
70.14. mouth hair (moustache)
70.15. from waist up hair there is (having hair from waist up, lion)
71.1. yucca bag (gunny sack)
77.1. yellow-er (oranges)
77.2. plums black-er (prunes)
77.10. red-der (tomatoes)
100.5. sweet completely (musk melon)
105.2.a. rolled up (thing) (tin or sheet iron chimney)
112.3. money yellow (gold)
301.2. money white (silver)
116.6. flowers white (potatoes).

Additional compounds of a different order are given below.

A second and less usual way of designating new objects is by use of a single morpheme or a morpheme plus morpheme partial, thus:—

117. maslak (cow)
45. ʔekʷanesxaw (horse)
70.5. ʔokme·low (pig)
70.4. ok-maʔek (cat)
101. picen (castrated one, steer)

This group is interesting because, although the terms are not purely descriptive, they have some such elements in them. 117. maslak, is not only the term for cow, but also for white; in 45. ʔekʷan-esxaw, ekʷan is the term for dog; in 70.5. ʔokme·low and 70.4. ok-maʔek, -ok is the term for hide, fur, hair. 101. picen (castrated one, steer) is actually descriptive.

Names such as the above also enter into compounds used to designate new objects. Examples are:—

45.2. horse food (hay, grass)
45.3. horse tipi (Wichita Indian house)
70.4.a. cat much (tiger)
70.4.c. cat spotted (leopard)
70.5.a. pig fat (bacon)

A third way in which Tonkawa designates new objects is through loan words. That these loan words are from Spanish and English only, is of interest to the culturalist; that more Spanish than English ones seem to occur is also interesting, although our sample is small. Examples of loan words in Tonkawa are:

17. ʔaso·ka sugar < English
23. ʔale·na wheat, flour < Spanish harina flour
371. ka·nos Mexican < Spanish Mexicano.
93. pa·n bread < Spanish pan
124. melikan American < American
127. me·lyo coin, a nickel < Spanish medio, a Mexican coin

These loan words also enter into compounds used to designate recently acquired

items. Examples of loan words in noun compounds are:
23.4. wheat thickly clustered (var. wheat)
23.5. wheat small (barley)
30.8. water Mexican (whiskey)

The Tonkawa language was remarked upon by Gatschet in the last century, and described by Hoijer in this. Though becoming (or having become) an extinct language, it will remain in the literature as an outstanding example of a well described language in terms of a variety of scholarly paraphernalia: grammars, specialized papers on special points, texts (in press), and dictionary. Hoijer's dictionary of Tonkawa proves that accurate linguistic work in the Boas-Sapir-Bloomfield tradition need not be a closed book to non-linguists; this review shows how readily—thanks to Hoijer's clarity in presentation—material of cultural and historical relevance may be excerpted from a dictionary. It goes without saying that points of purely linguistic interest may be just as readily checked in a dictionary which is well arranged as well as comprehensive. ('The present monograph lists all the morphemes found in my texts and grammatical notes.')

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DENSIDAD DE LA POBLACION DE HABLA INDIGENA EN LA REPUBLICA MEXICANA (Por Entidades Federativas y Municipios, Conforme d al Censo de 1940). Prologo de Alfonso Caso. Introduccion de Manuel German Parra. Memorias del Instituto Nacional Indigenista, Vol. 1, Num. 1, Mexico, 1950. 76 p. + 3 large maps.

This report, on the distribution and density of the Mexican population speaking Indian languages (according to the census of 1940), marks the first in a series of publications on the problems of the Mexican Indian, sponsored by the Instituto Nacional Indigenista. Forthcoming volumes in the series, according to Dr. Caso, will deal with various ethnological and sociological problems. He makes no mention of linguistic studies (except for a collection of songs in the indigenous languages) but it is to be hoped that the Instituto will eventually encourage, by publication, further work on the Indian languages of Mexico.

The report under review, while not specifically devoted to linguistic problems, contains much information of interest to the linguist. It may come as a surprise to many Americanists that about one-sixth of the population of modern Mexico (nearly three million people) speak Indian languages. Three out of every twenty are bilinguals, speaking both Spanish and an Indian tongue, while one out of every thirteen are Indian monolinguals. The report does not separate these in respect to the languages spoken (it is not a study of Indian language families) but, by means of detailed tables and three well executed maps, gives a very adequate picture of the density and spread of the Indian speaking population of Mexico.

The extent of this population makes it evident that studies of Indian languages in Mexico have practical as well as academic justification. We in the United States are inclined to view the study of Indian languages as essentially an academic pursuit, with few or no applications to modern political, economic, or social problems. Our Indian population is an insignificant percentage of the total population, and the percentage of bilinguals and monolinguals even smaller. But in Mexico, it is clear, the more important native languages (in terms of the number of speakers) provide a major problem of communication which must be solved if related political and social problems, so important to the development of the nation, are also to be solved. Linguists in Mexico have, then, a great responsibility, not only to the science of language, but also to the nation, in providing the linguistic studies necessary. The Instituto will no doubt cooperate to the fullest extent in meeting these responsibilities.

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RECENT PUBLICATIONS

A. General Linguistics

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